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JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

BENJAMIN LINCOLN ROBINSON, Editor-in-Chief

MERRITT LYNDON FERNALD
HOLLIS WEBSTER
CARROLL WILLIAM DODGE
} Associate Editors

WILLIAM PENN RICH
EDWARD LOTHROP RAND
} Publication Committee

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Vol. 26. January, 1924. No. 301.

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THE NEW ENGLAND BOTANICAL CLUB

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SOME CHANGES IN NOMENCLATURE.

K. M. Wiegand.

During the progress of work on the flora of the central portion of New York State a number of changes in nomenclature have been found necessary. It has seemed desirable to bring these together and publish them as a group.

Typha angustifolia L., var **elongata** (Dudley), comb. nov. *T. latifolia*, var. *elongata* Dudley, Cayuga Flora (Bull. Cornell Univ., Science ii. 102, 1886). *T. angustifolia*, var. *longispicata* Peck, Rep. N. Y. State Bot. xlvii. 162 or 36 (1894). *T. angustifolia*, var. *virginica* Tidestrom, Rhodora xiii. 242 (1911).

Dudley's type has not been seen, but the plant occurring in "large thick masses near the shore or in the water on Canoga and Cayuga Marshes and north of Hill's Branch" is this plant. It is the most abundant form of *Typha* on the Montezuma Marshes, in the bogs at the east end of Lake Ontario and along the St. Lawrence River at least as far north as Ogdensburg. It also occurs about Oneida Lake. Typical *T. angustifolia* is 1–1.5 m. high with lower leaves 3–7 mm. wide and pistillate spike in fruit, 8–13 cm. by 10–17 mm. In var. *elongata* the height is 2–3.5 m., lower leaves 9–15 mm. broad and pistillate spikes 15–25 (30) cm. by 20–23 mm.

Muhlenbergia mexicana (L.) Trin., forma **commutata** (Scribn.), forma nov. *M. mexicana*, subsp. *commutata* Scribn. Rhodora ix. 18 (1907). *M. mexicana*, var. *commutata* Farwell, Rep. Mich. Acad. Sci. xvii. 181 (1916).

Muhlenbergia foliosa Trin., forma **ambigua** (Torrey), forma nov. *M. ambigua* Torr. Nicollet's Rep. 164 or 237 (1843). *M. foliosa*, subsp. *ambigua* Scribn. Rhodora ix. 20 (1907).

Following the practice of recent years, awned plants of a normally unawned species are considered as forms, not varieties, unless there are other points of difference.

AGROSTIS TENUIS Sibth., forma **aristata** (Parnell), forma nov. *A. vulgaris aristata* Parnell, Grass. Scot. 34 (1842).

Until it is decided whether *A. capillaris* L. is *A. vulgaris* With. as held by Hitchcock[1] and Schinz,[2] or some other species as held by several botanists including Piper,[3] we may follow Piper in using the next oldest name that applies unquestionably to *A. vulgaris*, namely *A. tenuis* Sibth. This name antedates *A. vulgaris* With. by two years. The awned form of this species has often been cited as var. *aristata* Gray, but reference to the original description[4] will show that Gray regarded his plant as an awned form of *A. alba*, not of *A. vulgaris*. The earliest name found by the writer for the awned form of *A. tenuis* (*A. vulgaris*) is that of Parnell cited above.

ERIOPHORUM VIRGINICUM L., forma **album** (Gray), forma nov. *E. virginicum*, var. *album* Gray, Man. ed. 5. 566 (1876).—The form with white bristles.

CAREX TENERA Dewey, var. **echinodes** (Fernald), comb. nov. *C. straminea*, var. *echinodes* Fernald, Proc. Amer. Acad. xxxvii. 474 (1902).

Mackenzie[5] has recently shown that *C. straminea* as understood by Fernald and others is not *C. straminea* Willd. but is the *C. tenera* of Dewey.

CAREX UMBELLATA Schk., forma **vicina** (Dewey), forma nov. *C. umbellata*, var. *vicina* Dewey, Amer. Jour. Sci. x. Tab. D, f. 13 (1826); xi. 317 (1826).

Plants of *C. umbellata* often occur with rather tall culms at the top of which are one or two pistillate spikes in addition to the staminate spike. This form would seem to be worthy of notice as it might be mistaken by the beginner for *C. communis* or other species of the group. These plants do not seem to constitute a definite race.

CAREX HYSTERICINA Muhl., forma **Dudleyi** (Bailey), forma nov. *C. hystricina*, var. *Dudleyi* Bailey, Mem. Torr. Bot. Club i. 54 (1889). *C. Pseudo-Cyperus* × *C. hystricina?* Dudley, Cayuga Flora, 118 (1886). *C. hystericina*, var. *Cooleyi* Robins. & Fernald, Gray's Man. ed. 7. 251 (1908), not *C. Cooleyi* Dewey, Amer. Jour. Sci. xlviii. 144 (1845), and not *C. hystricina* β Dewey, Wood's Classb. 206 (1861).

[1] Gen. N. A. Grasses. Bull. U. S. Dept. Agr. no. 772, Mar. (1920).
[2] Mitth. Bot. Mus. Zürich, xcii. 261 (1921).
[3] Bull. U. S. Dept. Agr. no. 692, July (1918).
[4] Man. ed. 1. 578 (1848).
[5] Bull. Torr. Bot. Club xlii. 603 (1915).

Dewey's plant had long peduncles but short spikes, and the plant was said to be prostrate. Our plant is a tall robust form of *C. hystericina* with ordinary peduncles but long pistillate spikes.

POLYGONUM MUHLENBERGII (Meisn.) Watson, forma **natans**, forma nov.—Caulibus submersis elongatis natantibus; foliis natantibus glabris lucidis.

Stems elongated, rooted at base, submerged, floating above; leaves floating, glabrous, glossy. Some specimens examined are: MASSACHUSETTS: Lake Cochituate, Natick, 1908, *K. M. Wiegand & M. Heatley*. NEW YORK: Hermon, *O. P. Phelps*, no. 1550. COLORADO: Fort Logan, 1915, *P. A. Munz*, no. 26. WASHINGTON: Moscow, 1913, *W. C. Muenscher*, no. 129 (TYPE in Herb. New York State College of Agriculture.) It occurs occasionally through central New York.

This form bears the same relation to typical *P. Muhlenbergii* that the floating form of *P. amphibium* does to f. *terrestre* (Leers) Blake and f. *Hartwrightii* (Gray) Blake. It can usually be distinguished from *P. amphibium* by the more acute leaves, longer spikes (3–9 cm.) and flowers of a deeper pink.

OENOTHERA PARVIFLORA L., var. **angustissima** (Gates), var. nov. *O. angustissima* Gates, RHODORA XV. 46 (1913).

OENOTHERA BIENNIS L., var. **nutans** (Atkins. & Bart.), var. nov. *O. nutans* Atkinson & Bartlett, RHODORA XV. 83 (1913).

OENOTHERA BIENNIS L., var. **pycnocarpa** (Atkins. & Bart.), var. nov. *O. pycnocarpa* Atkinson & Bartlett, RHODORA XV. 83 (1913).

In recent years the writer has given much attention to the "biennis" group of *Oenothera*, both in the field and in the larger herbaria, but without very satisfactory results. There seem to be two species in the eastern United States of the kind usually understood as species by taxonomists. These have been given expression in Gray's Man. ed. 7 as *O. muricata* and *O. biennis*. The two species differ by good structural characters, but these are not the characters usually designated in our manuals. In the former species the pubescence of the foliage, if present, is strigose, the body of the seeds about 1.7 to 2.2 mm. long and 1.0 to 1.5 mm. broad, and the sepal-tips often subterminal. In *O. biennis* the leaves are velvety beneath and somewhat thinner in texture, the seeds 1.2 to 1.8 mm. long and about 0.8 mm. broad, and the sepal-tips usually terminal and connivent. All other forms with which the writer is familiar are not distinct structurally, but intergrade, and the differences are frequently very slight and difficult to recognize. The status of the large-flowered forms variously called *O. Lamarckiana*, *O. grandiflora*, etc., is not clear. They may

be good species or only forms of the above two species. They evidently represent more than one race. The writer believes that the names *O. parviflora* L.[1] and *O. muricata* L.[2] apply to the same species.[3] *O. parviflora* was said by Linnaeus[4] to differ from *O. biennis* in having the apex of the fruit "coronatus margine octifido nec quadrifido" and to have stems with scattered hairs without tuberculate bases, leaves repand-subdentate less soft, calyx tube "quadruplo-brevior," denticulate below the apex (therefore the mucros distant before anthesis) and distant petals half as large as those of *O. biennis*. No species other than the so-called *O. muricata* answers this description. This species in many of its forms does not have muricate hairs and the petals are often small. The eight-lobed fruit would seem to have been an error or based on an unusual plant; but the four lobes are in many plants slightly retuse, and it would not be strange if Linnaeus' plant were an extreme in this respect. None of the numerous names proposed in *Oenothera* seem to apply to the three New York State forms here under consideration other than those cited above. Since these three forms are characteristic types in central New York, it is necessary to give them legitimate varietal names. In so doing *O. biennis* L. is interpreted in the sense of Bartlett.[5]

RHODODENDRON NUDIFLORUM (L.) Torr., var. **roseum** (Lois.), var. nov. *Azalea rosea* Lois. in Duham. Traite Arb. Arbust. ed. 2, v. 224, t. 64 (1812). *Rhododendron roseum* Rehder, Monog. Azaleas, Pub. Arnold Arb. ix. 138 (1921). *A. prinophylla* Small, N. Amer. Flora xxix. 42 (1914).

The earlier var. *rosea* Sweet was a *nomen nudum*. After a study of his own material and that in the Gray Herbarium the writer is unable to accept the view of Rehder that this is a species distinct from *R. nudiflorum*. In fact it seems to grade into that and at most the difference is one of pubescence only. The writer has been unable to make out a stamen difference as cited by Rehder.

ASTER **lucidulus** (Gray), sp. nov. *A. puniceus*, var. *lucidulus*, Gray, Synopt. Flora N. Amer. i. pt. 2, 195 (1884). *A. puniceus*, var. *lucidus* MacMillan, Met. Minn. 517 (1892).

This is a good species, having shorter internodes than *A. puniceus*, smoother and more glossy leaves, more congested heads with pale

[1] Systema Nat. ed. 10, 998 (1759).
[2] Systema Nat. ed. 12, 263 (1767).
[3] See also Farwell, Am. Mid. Nat. viii. 272 (1923).
[4] Sp. Pl. ed. 2, 492 (1762).
[5] RHODORA xv. 48 (1913).

lilac instead of violet-blue rays, about 35 instead of 50 disk flowers and straighter less spreading involucral bracts. The two species when growing together would rarely be confused. Gray cites *A. lucidus* Wend. as a synonym, but neither de Candolle nor Nees von Esenbeck was clear as to the identity of Wenderoth's plant, and Gray gave no reasons for his interpretation. The original description of Wenderoth is not convincing. *A. lucidus* Wend. is antedated by *A. lucidus* Moench, which also is difficult to interpret.

BIDENS FRONDOSA L., var. **pallida** Wiegand, comb. nov. *B. melanocarpa pallida* Wiegand, Bull. Torr. Bot. Club xxvi. 406 (1899).

The taxonomic status of the plants included originally under this variety is not clear. They have the appearance of hybrids, also of ecological forms. Sporadic plants of this type still are found about Cayuga Lake.

ARCTIUM MINUS Bernh., var. **corymbosum**, var. nov. *A. nemorosum* (b) and (c) Fernald & Wiegand, RHODORA xii. 46 (1910).—Capitulis plus minusve corymbosis.

Heads more or less corymbose instead of subspicate. Native of Europe and widely scattered in the New World.

Authors have variously interpreted this form as the *Lappa vulgaris* Hill or *L. intermedia* Lange.[1] Hill's plate might represent this form but has more the appearance of *A. Lappa*. Lange's illustration in Flora Danica might be interpreted as our form or as a chance extreme of *A. minus*, but his description definitely calls for racemose heads, and Reichenbach so figures them. Also *A. minus*, var. *paniculatum* Lange[2] would not seem to be quite our plant. As no name has been found which applies with reasonable surety to the plant in question a new name is here proposed. Much of the material of this variety in the Herbarium of Cornell University has the aspect of a hybrid between *A. Lappa* and *A. minus*, but whether this is its true origin cannot be said. In 1910 Fernald and Wiegand (l. c.), following some European authors, retained *A. nemorosum* Lejeune as distinct from *A. minus* (Hill.) Bernh. In the opinion of the writer, observations in the field since that time have not tended to support this view, as the projection of the florets beyond the involucre varies much in the same plant, and the achenes vary in color, especially in the proportion of light and dark markings. It seems best to treat these forms all as *A. minus*.

CORNELL UNIVERSITY, Ithaca, N. Y.

[1] Evans, Jour. Bot. li. 113 (1913).
[2] Lange, Dansk. Fl. ed. 4, 357 (1886).

A REVISION OF THE MT. DESERT HEPATIC LIST.

ANNIE LORENZ.

MT. DESERT is popularly regarded as a mountainous island, whereas it is really a low, glacial-drifted region slashed across by the granite range of Lafayette National Park. It is difficult to describe Mt. Desert to anyone unfamiliar with its delights without being suspected of membership in the Bar Harbor Board of Trade.

As a matter of fact, the hepatic flora is anything but exciting, being north German rather than alpine. Furthermore, the mountains have been so burned over, except for a few places, that the original moss-covering is gone.

For more details of topography, geology, etc., the reader is referred to Rand and Redfield's Mt. Desert Flora. The original hepatic list, determined by Underwood, contained 49 species, and, on recent examination of the collection, although there were a few withdrawals, the number remained the same, between modern segregations and overlooked admixtures. Three of these were new to Maine, including *Diplophyllum albicans*, its only New England station, although abundant in the island. The others were *Calypogeia fissa* and *Scapania paludosa*.[1]

The writer has had four seasons' investigation there, and has brought the list up to 97, including five more new to Maine, one, *Lejeunea patens*,[2] being likewise new at that time to New England. The others were *Lunularia cruciata*, *Calypogeia sphagnicola*, *C. Sullivantii*, and *Radula obconica*.[3]

Of the many more species presumably resident upon the island, the majority are to be sought within the western part, as that has been less thoroughly explored.

The writer wishes to thank Mr. Rand, who kindly let her take the hepatic collection home for leisurely study. Miss Shaw and Prof. W. R. Taylor have also contributed specimens. Further material will be most gratefully received from anyone visiting the island.

[1] RHODORA, vol. 23, p. 284, Dec. 1921.
[2] RHODORA, vol. 25, p. 97, June 1923.
[3] RHODORA, vol. 21, p. 169, Sept. 1919; vol. 23, p. 284, Dec. 1921.

Ricciaceae.

Riccia Sullivantii Aust. Clayey roadsides, Young's District; Great Pond; road toward Prettymarsh (L.).

Rebouliaceae.

Asterella tenella (L.) Beauv. Clayey roadside near Indian Point (L.).

Marchantiaceae.

Conocephalum conicum (L.) Dumort. On damp ground, common. Aunt Molly's Beach (Rand); Bar Harbor (Miss Furbish); Cadillac Cliff (L.).

Lunularia cruciata (L.) Dumort. Mt. Desert Nurseries' greenhouse, Bar Harbor (L.).

Marchantia polymorpha L. On the ground, frequent. Beech Hill; High Head; Somesville and elsewhere (Rand); near Anemone Cave (L.).

Riccardiaceae.

Metzgeria furcata (L.) Dumort. Ledges, Newport Mt., Pementic (L.).

Pallavicinia Flotowiana (Nees) Lindb. In *Thuja* swamp, Canada Brook, south of Appalachian Mountain Club camp (L.).

P. Lyellii (Hook.) S. F. Gray. Sunken Heath Brook (Rand); Canada Brook (L.).

Riccardia latifrons Lindb. Roberts' Meadow, Bar Harbor (L.); Great Cranberry Heath (L.).

R. multifida (L.) S. F. Gray. Wet rocks, infrequent. Green Mt. Gorge; Stanley Brook (L.).

R. palmata (Hedw.) Carruth. Peaty ground, old logs, infrequent. Baker's I. (L.); Stanley Brook (Rand, as *Aneura palmata*).

R. pinguis (L.) S. F. Gray. Upper Hadlock Pond (L.); Bass Harbor (W. R. Taylor).

Pelliaceae.

Blasia pusilla L. Seal Cove road, Southwest Harbor (W. R. Taylor).

FOSSOMBRONIA FOVEOLATA Lindb. Pond shores and roadsides, common. Jordan Pond; Ripples Pond; Great Pond (Rand, as *F. Dumortieri*); Canada Brook; Bubbles Pond (L.); Manset (Taylor).

PELLIA EPIPHYLLA (L.) Corda. On damp ground, common.

LOPHOZIACEAE.

CHILOSCYPHUS FRAGILIS (Roth) Schiffn. Southern end of Great Pond (Rand, as *C. polyanthos*). On dripping rocks, northern end of Beech Mt. (Rand, as *C. polyanthos* var. *rivularis*); Hunter Brook (L.); Southwest Harbor (Taylor).

C. PALLESCENS (Ehrh.) Dumort. On damp ground. Spring on Spring trail, Jordan Mt. (L.).

C. RIVULARIS (Schrad.) Loeske. Stanley Brook (L.).

GEOCALYX GRAVEOLENS (Schrad.) Nees. On logs and rocks. Beech Mt. (Rand); Jordan Pond path (L.). Common.

JAMESONIELLA AUTUMNALIS (DC.) Steph. Common on logs and rocks. Listed as *J. Schraderi*. Somes Pond (Rand, as *Jungermannia pumila*).

JUNGERMANNIA LANCEOLATA L. Spring trail, Jordan Mt. (L.).

J. PUMILA With. Stanley Brook, Jordan Stream (L.).

LOPHOCOLEA HETEROPHYLLA (Schrad.) Dumort. On ground and old logs. Head of Great Pond (Rand, as *L. bidentata*); Jordan Pond path (L.); near Ripples Pond (Rand); Islesford (L.).

LOPHOZIA ALPESTRIS (Schleich.) Evans. Sargent Mt.; Baker's I. (L.).

L. ATTENUATA (Mart.) Dumort. Common on logs and rocks. Beech Mt.; Cranberry Heath (Rand, as *L. excisa*); Sargent Mt. (L.).

L. BARBATA (Schreb.) Dumort. On rocks, Western Mt. (Rand, as *Jungermannia barbata*); Bar Harbor; Brown's Mt. Notch (L.).

L. BICRENATA (Schmid.) Dumort. Roadside near Asticou; Upper Hadlock Pond (L.).

L. CONFERTIFOLIA Schiffn. Great Head; Otter Cliffs; ledges on Cliff Drive, Seal Harbor (L.).

L. INCISA (Schrad.) Dumort. Old logs and peaty soil. Baker's I. Hunter Brook; Ocean Drive (L.); Great Pond (Rand, as *Jungermannia incisa*).

L. INFLATA (Huds.) M. A. Howe. On ground and rocks (listed as *Jungermannia inflata* by Rand), too common; variable. Brown's

Mt. (Rand); Beech Mt. (Rand); Sargent Mt. (Rand); Robinson Mt. (E. Faxon); Ocean Drive (L.).

L. KUNZEANA (Huben) Evans. In bog-holes with *L. inflata*, etc. Day Mt.; Pemetic; Great Cranberry I., near Club House (L.).

L. LONGIDENS (Lindb.) Macoun. On rocks and old logs. Ledges near Ocean Drive; Giant's Slide; south end of Beech Mt. (L.).

L. LONGIFLORA (Nees) Schiffn. On sphagnum in boggy places. Pemetic; Baker's I. (L.).

L. MARCHICA (Nees) Steph. On *Sphagnum Russowii*, Beech Mt. (Rand, as *Jungermannia marchica*). Spec. in herb. C. Warnstorf. Specimen not seen.

L. PORPHYROLEUCA (Nees) Schiffn. On old logs. Jordan Pond path; Baker's I. (L.).

L. VENTRICOSA (Dicks.) Dumort. On ground and rocks. Beech Mt. (Rand, as *Jungermannia ventricosa*); Hunter Brook (L.).

MARSUPELLA AQUATICA (Lindenb.) Schiffn. Rocks in Deer Brook, Western Mt. (Rand, as *M. emarginata*.)

M. EMARGINATA (Ehrh.) Dumort. Wet rocks, frequent.

M. SULLIVANTII (De Not.) Evans. Damp rocks, Green Mt. (D. C. Eaton, E. Faxon, as *M. adusta*); Beech Cliff (Rand); Anemone Cave (L.).

MYLIA ANOMALA (Hook.) S. F. Gray. Among sphagnum, Freeman Heath (E. Faxon); Aunt Betty's Pond (Rand, as *M. Taylori*); Roberts' Meadow; Great Cranberry Heath (L.).

NARDIA CRENULATA (Sm.) Lindb. Roadsides, Ocean Drive; Great Pond; Upper Hadlock Pond (L.).

N. GEOSCYPHUS (De Not.) Lindb. Clayey roadside, Upper Hadlock Pond (L.).

N. OBSCURA Evans, Hunter Brook, Stanley Brook; Spring on Jordan Mt. trail; Green Mt. Gorge (L.).

PLAGIOCHILA ASPLENIOIDES (L.) Dumort. In wet places, common. Cold Brook; Intervale Brook; northern end of Beech Mt. (Rand); Hunter Brook (L.).

SPHENOLOBUS EXSECTAEFORMIS (Breidl.) Steph. On peaty ground, rocks, etc. Ledges near Ocean Drive; Baker's I. (L.).

S. EXSECTUS (Schmid.) Steph. On old logs and rocks, Seal Harbor; Spring trail to Jordan Mt.; old logs on new Appalachian Mountain Club path (L.).

S. HELLERIANUS (Nees) Steph. On old logs. Head of Green Mt. Gorge; Seal Harbor (L.).

S. MICHAUXII (Web.) Steph. Seal Harbor (E. L. Shaw.)

S. MINUTUS (Crantz) Steph. On rocks. Northern end of Beech Mt. (Rand, as *Diplophyllum Dicksoni*). Giant's Slide; Brown's Mt. Notch (L.).

CEPHALOZIELLACEAE.

CEPHALOZIELLA BIFIDA (Schreb.) Schiffn. On dry ground. Day Mt. (L.).

C. BYSSACEA (Roth) Warnst. Ledges and peaty soil. Robinson Mt. (Faxon); Sargent Drive; Baker's and Big Cranberry Ids. (L.); Sargent Mt. (Rand, as *Cephalozia divaricata*.).

C. ELACHISTA (Jack) Schiffn. Roberts' Meadow, Bar Harbor; Cranberry Heath (L.).

C. HAMPEANA (Nees) Schiffn. Seal Harbor; shore of Great Pond (L.).

CEPHALOZIACEAE.

BAZZANIA TRILOBATA (L.) S. F. Gray. Very common in damp woods. Hadlock Upper Pond; Interlaken Brook; Cold Brook; northern foot of Beech Mt. (a slender form, Rand); Brown's Mt. (Redfield).

B. DENUDATA (Torrey) Trevis. On rocks and ledges. Spring trail to Jordan Mt. (L.).

CALYPHOGEIA FISSA (L.) Raddi. On bank, Seal Harbor (Rand, as *Kantia Trichomanis*).

C. NEESIANA (Massal. & Carest.) C. M. Frib. Jordan Pond path on bank (L.).

C. SPHAGNICOLA (Arn. & Perss.) Warnst. & Loeske. On sphagnum. Roberts' Meadow, Cranberry Heath (L.).

C. SUECICA (Arn. & Perss.) K. Müll. On old log, Jordan Pond path (L.).

C. SULLIVANTII Aust. On damp bank, Upper Hadlock Pond (L.).

C. TRICHOMANIS (L.) Corda. On ground and logs, common. Wood road to Western Mt. (Rand, as *Kantia Trichomanis*); Jordan Pond path (L.).

CEPHALOZIA BICUSPIDATA (L.) Dumort. Logs and soil, common. Jordan Pond trail from Northeast Harbor (Rand); Norwood Cove (Rand); Hunter Brook, Great Head, Baker's I. (L.).

C. CATENULATA (Hüben) Spruce. Damp logs. Great Pond (Rand, as *C. virginiana*); Jordan Pond path, near Appalachian Mountain Club camp, Echo Lake.

C. CONNIVENS (Dicks.) Lindb. On peat. Baker's I., Cranberry Heath, Roberts' Meadow (L.).

C. CURVIFOLIA (Dicks.) Dumort. On old logs, Northwest Arm woods (Rand); Jordan Pond path (L.).

C. FLUITANS (Nees) Spruce. Pools in sphagnum, Sunken Heath (Faxon & Rand); Upper Breakneck Pond (L.).

C. MACROSTACHYA Kaal. On sphagnum. Sunken Heath (Rand, as *C. multiflora*); Cranberry Heath (L.).

C. MEDIA Lindb. Old logs, common. Beech Mt. (Rand); Jordan Pond path (L.).

LEPIDOZIA REPTANS (L.) Dumort. Among mosses on logs and rocks. Northern end of Beech Mt.; Norwood Cove (Rand); Jordan Pond path (L.).

L. SETACEA (Web.) Mitt. In sphagnum. Aunt Betty's Pond (Faxon & Rand); Roberts' Meadow; Cranberry Heath (L.).

ODONTOSCHISMA DENUDATUM (Mart.) Dumort. Seal Harbor; Baker's I.; Appalachian Mountain Club camp, on old logs (L.).

O. ELONGATUM (Lindb.) Evans. On damp peaty soil. Bubbles Pond (both ends); Jordan Pond (L.).

PTILIDIACEAE.

BLEPHAROSTOMA TRICHOPHYLLUM (L.) Dumort. On logs and ledges. Stanley Brook (Rand); Jordan Pond path (L.).

PTILIDIUM CILIARE (L.) Nees. Common. Slopes of Green Mt. (D. C. Eaton); Brown's Mt.; Pemetic; Sargent Mt.; Beech Mt.; Dog Mt.; Western Mt.; Great Cranberry Heath (Rand); Baker's I. (L.).

P. PULCHERRIMUM (Web.) Hampe. Very common. Gorge between Triads; Beech Hill; Great Pond road; Otter Cliffs; near Aunt Molly's Beach (Faxon & Rand); Jordan Pond path (L.).

TRICHOCOLEA TOMENTELLA (Ehrh.) Dumort. In moss, Cold Brook (Rand).

SCAPANIACEAE.

DIPLOPHYLLUM ALBICANS (L.) Dumort. On ledges, frequent. Brown's Mt. Notch (Rand); Spring and South End trails, Jordan Mt.; Giant's Slide (L.).

D. TAXIFOLIUM (Wahl.) Dumort. On ledges, less common. West branch of Hadlock Brook (Rand); Brown's Mt. Notch; Western Mt.; Spring Trail, Jordan Mt. (L.).

SCAPANIA CURTA (Mart.) Dumort. On banks. Thunder Hole; Newport Mt. (L.).

S. DENTATA Dumort. Brook-bed on Eagle Lake Carry (L.).

S. IRRIGUA (Nees) Dumort. In boggy places. Baker's I.; shore of Great Pond (L.).

S. NEMOROSA (L.) Dumort. Very common in damp places. Green Mt. Gorge (D. C. Eaton); Beech Mt.; Dog Mt.; Brown's Mt.; Jordan and Sargent Mts.; Western Mt.; near Ripples Pond; Upper Breakneck Pond (Rand); Hunter Brook; Giant's Slide; Sargent Drive (L.).

S. PALUDICOLA Loeske & K. Müll. In bog-holes. Pemetic; Big Cranberry I., near Clubhouse (L.).

S. PALUDOSA K. Müll. Sunken Heath Brook (Rand, as *S. undulata*).

S. UMBROSA (Schrad.) Dumort. Woods, Norwood Cove (Rand, as *S. nemorosa*).

S. UNDULATA (L.) Dumort. Cold Brook; rill near Breakneck Pond; Western Mt.; Somesville; Stanley Brook; Jordan Pond (Rand); Hunter Brook; Ocean Drive (L.).

RADULACEAE.

RADULA COMPLANATA (L.) Dumort. Rocks and trees, common. Intervale Brook (Rand, mixed in *Frullania eboracensis*); Jordan Pond path (L.).

R. OBCONICA Sull. Wet rocks. Spring on Pemetic trail; Stanley Brook (L.).

PORELLACEAE.

PORELLA PLATYPHYLLOIDEA (Schwein.) Sull. Common. Seal Harbor (Redfield, as *P. platyphylla*); Deer Brook (Rand); Hadlock Brook (Rand); Breakneck Road (Rand); Jordan Pond path (L.).

LEJEUNEACEAE.

FRULLANIA ASAGRAYANA Mont. On trees and rocks, common. Eliot's Point (Redfield); wood road to Great Pond, Southwest Harbor; northern foot of Beech Mt. (Rand); Jordan Pond path; on *Thuja*

in woods south of Appalachian Mountain Club camp, Echo Lake (L.).

F. Brittoniae Evans. On *Thuja*, Canada Brook (L.).

F. eboracensis Gottsche. Common on trees and rocks. Somesville; Brown's Mt.; Sargent Mt. (Rand); Jordan Pond path (L.).

Jubula pennsylvanica (Evans) Steph. On wet rocks, Intervale Brook (Rand, as *J. Hutchinsiae* var. *Sullivantii*); Spring on Pemetic trail (L.).

Lejeunea cavifolia (Ehrh.) Lindb. On trees and rocks. Northern end of Beech Mt. (Rand, mixed in *Plagiochila*).

L. patens Lindb. On trees and rocks. Spring on Pemetic trail; Green Mt. Gorge; Stanley Brook; on *Thuja* in woods south of Appalachian Mountain Club camp (L.).

Anthocerotaceae.

Anthoceros laevis L. On damp ground. Seal Harbor; Cadillac Cliff at Sea Cave; Great Pond; roadside near Prettymarsh (L.).

Notothylas orbicularis (Schwein.) Sull. Clayey roadside between Town Hill and Indian Point (L.).

Hartford, Connecticut.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLII.

RUBIACEAE.

ASPERULA.

A. odorata L Ponkapaug spring in rich woods, Blue Hill Reservation, Randolph (*J. R. Churchill*, June 13, 1908; *J. R. Churchill, C. H. Knowlton & R. A. Ware*, Aug. 1, 1908). Native in Europe, northern and western Asia.

CEPHALANTHUS.

C. occidentalis L. Swampy places, common throughout.

GALIUM.

G. Aparine L. Woods and open places, especially on the coast.

G. asprellum Michx. Roadsides and moist thickets, common.

G. BOREALE L. Mowing-field by brook, Woburn (*C. H. Knowlton*, July 4, 1906); Needham (*Miss Gertrude Morton*, July 7, 1879, July 1, 1881).

G. circaezans Michx. Dry open woods and hillsides, common.

G. Claytoni Michx. Swamps and wet meadows, common.

G. ERECTUM Huds. Georgetown near Pentucket Pond (*J. H. Sears*, June 12, Aug. 9, 1905); Oak Island, Revere (*H. A. Purdie*, June 2, 1895, others later); E. Somerville (*C. E. Perkins*, June 25, 1879).

G. lanceolatum Torr. Dry woods, occasionally in moist soil; apparently common, but no reports from southern towns.

G. MOLLUGO L. Fields and roadsides, rare; Andover, Danvers, Somerville, Boston, Newton, Needham, Natick, W. Bridgewater.

G. palustre L Swamps and wet places, frequent.

G. pilosum Ait. Dry soil; well distributed and frequent, but only three stations in Essex county.

G. SYLVATICUM L. N. Andover (*A. S. Pease*, Sept. 14, 1901); Wellesley Hills, (*H. A. Purdie*, July 18, 1897). Specimens in herb. N. E. Botanical Club.

G. tinctorium L. Moist soil, common.

G. trifidum L. Forming prostrate mats on floating debris, margin of Pilling Pond, Lynnfield (*M. L. Fernald*, Oct. 21, 1917); marshy margin of Lake Waban, Wellesley (*F. W. Hunnewell*, Aug. 24, 1912).

G. triflorum Michx. Woods and glades, common.

G. VERUM L. Dry fields and open woods; occasional at Danvers, Arlington, Natick, Lincoln, Dorchester; abundant in Norfolk county from Hyde Park and Dedham south to Norfolk and Medfield.

HOUSTONIA.

H. caerulea L. Fields, very common throughout.

H. lanceolata (Poir.) Britton. Dry sandy pasture, Newburyport (*Wm. Wendte*, June 30, 1898); dry soil, Sherborn (*Miss M. L. Loomis*, June 20, 1911). Specimens in herb. Gray, and Boston Soc. Nat. Hist.

H. longifolia Gaertn. Dry ledges and hillsides around Boston and suburbs, and the Blue Hill Reservation; also at Groveland, Boxford, Marlboro, Braintree, Sharon, Medfield and Wrentham.

MITCHELLA.

M. repens L. Woods, common. White-fruited form collected in Middleton and Concord.

SHERARDIA.

S. ARVENSIS L. Newburyport (*J. H. Sears*, June, 1887; *E. Moulton*, no date); Parker Hill, Roxbury (*C. E. Faxon*, June, 1877); Boston (*C. J. Sprague*, 1853).

CAPRIFOLIACEAE.

DIERVILLA.

D. FLORIDA Sieb. & Zucc. Open ledgy hilltop at least one-half mile from nearest house, Conomo Drive, Essex (*F. T. Hubbard*, June 14, 1913); by old house, Randolph Ave., Blue Hill Reservation (*N. T. Kidder*, June 17, 1819). A cultivated species introduced from northern China.

D. Lonicera Mill. Dry woods and rocky places, common.

LINNAEA.

L. borealis L., var. **americana** (Forbes) Rehder. Rich woods, frequent in Essex Co., especially on Cape Ann; occasional elsewhere from Arlington and Dover northward.

LONICERA.

L. caerulea L., var. **calvescens** Fernald & Wiegand. See RHODORA xii. 210, 1910. Swamps, common from Needham, Sherborn and Framingham to Franklin and Wrentham, also at Medford. Especially abundant in Sharon.

L. caerulea L., var. **villosa** (Michx.) Torr. & Gray. The same habitat reported from Framingham, Dedham, Sharon, Walpole, Medfield, Norfolk, Medway.

L. canadensis Marsh. Rich woods, rare; Haverhill, Hamilton, Manchester, Beverly, Littleton, Sherborn; Framingham, according to Dame & Collins, Fl. Middlesex Co. 43, 1888.

[*L. hirsuta* Eat. Damp rocky woods, Sudbury, according to George B. Emerson. Report on trees and shrubs growing naturally in Massachusetts, 355–7, 1846. Specimen not seen.]

L. JAPONICA Thunb. Rich woods at Wellesley, Sherborn and also in Blue Hill Reservation; probably elsewhere.

L. MORROWI Gray. Escaped from cultivation to roadsides and thickets at Salem, Swampscott, Arlington, Blue Hill Reservation, Boston, Holbrook, and Halifax.

L. PROLIFERA (Kirchn.) Rehder. See RHODORA xii. 166–167. Woodlot, Westford (*Miss E. F. Fletcher*, 1912 and 1913). Specimen in herb. Gray.

L. sempervirens L. Dry woods and thickets, frequent; possibly native in some places. Occasional with yellow flowers (var. *flava* Regel).

L. SULLIVANTII Gray. Wild in woods, Reading (*Mrs. Franz Schneider*, June 9, 1919). Specimen in herb. Gray.

L. TARTARICA L. Escaped from cultivation, rare; Medford, Cambridge, Newton, Sherborn, Wellesley.

L. XYLOSTEUM L. Escaped to woods and open places; Concord, Wellesley, Natick, Blue Hill Reservation, Holbrook.

SAMBUCUS.

S. canadensis L. Swamps and wet places, common throughout.

S. racemosa L. Woods and rocky places in moist soil, frequent from Blue Hills and Sherborn northward; reported from Hingham by T. T. Bouvé.

SYMPHORICARPOS.

S. ALBUS (L.) Blake, var. LAEVIGATUS (Fernald) Blake. (*S. racemosus* Michx., var. *laevigatus* Fernald. See RHODORA xvi. 119, 1914.) Persistent around old places, and frequently spreading.

S. ORBICULATUS Moench. Escaped from cultivation near farmhouse, Chelmsford (*C. W. Swan*, July 20, 1890; Sept. 8, 1889); many plants on rocky knoll near site of old greenhouse, Arlington (*C. A. Weatherby*, Aug. 4, 1908).

TRIOSTEUM.

T. aurantiacum Bicknell. Dry rocky woods and open places; frequent, except in southern and northwestern towns.

T. perfoliatum L. Low woods and rocky pastures, rare; Weston, Weymouth.

VIBURNUM.

V. acerifolium L. Dry woods, common.

V. alnifolium Marsh. Woods and swamps, frequent in Essex county, also at Concord, Littleton, W. Roxbury, Brookline, Dedham, Holbrook.

V. cassinoides L. Swamps and moist woods, frequent throughout.

V. dentatum L. Wet places and wet thickets, common throughout.

V. Lentago L. Wet thickets and shores, common throughout.

V. OPULUS L. Bradford, apparently escaped from cultivation; also at Beaver Brook Reservation; probably elsewhere.

V. Opulus L., var. **americanum** Ait. See RHODORA xx. 15, 1918. Cold swamps in the northern towns, rare.

VALERIANACEAE.

VALERIANA.

V. OFFICINALIS L. Escaped from cultivation at Revere, Lincoln, Natick and Milton.

DIPSACEAE.

DIPSACUS.

D. SYLVESTRIS Huds. About a dump, Cambridge (*M. L. Fernald & B. Long*, Aug. 28, 1913). Specimen in herb. N. E. Botanical Club. Also at Danvers.

KNAUTIA.

K. ARVENSIS (L.) T. Coulter. Near Natural History building, Boston (*C. W. Swan*, 1883); overrunning a field, Hanover (*H. A. Purdie*, June 6, 1897).

SCABIOSA.

S. COLUMBARIA L. Boston (*C. E. Perkins*, Aug. 20, 1880); Specimen in herb. N. T. Kidder.

SUCCISA.

S. PRATENSIS Moench. Bank of Merrimac River, Riverside, Haverhill, (*J. R. Lunt*, Aug. 22, 26, 1911). Specimens in herb. Gray. See RHODORA xiv. 174, 1912.

CUCURBITACEAE.

The garden vegetables in this family are annuals, very sensitive to frost, and although they come up freely in waste places, it is doubtful if they ripen fruit in a wild state and reappear a second season.

CITRULLUS.

C. VULGARIS Schrad. Waste places in Woburn, Arlington, Cambridge and Boston.

CUCUMIS.

C. ANGURIA L. Pacific Mill yard, Lawrence (*M. E. Gutterson*, August, 1909). Specimen in herb. Gray. A tropical species frequently escaping as a weed.

D. MELO L. Waste ground and dumps in Cambridge and Boston.

C. SATIVUS L. Waifs running wild at Gloucester and East Boston.

CUCURBITA.

C. MAXIMA Duchesne. Reported from dumps in Wakefield and Malden.

C. PEPO L. Waste places, Revere and Cambridge.

ECHINOCYSTIS.

E. lobata (Michx.) T. & G. Native in alluvial thickets; often cultivated, and frequently escaping to waste places.

LAGENARIA.

L. VULGARIS Ser. Revere, near beach (*Helen E. & F. W. Grigg*, Aug. 27, 1894). Specimen in herb. F. W. Grigg.

SICYOS.

S. ANGULATUS L. Frequent in waste places, apparently not a native plant in our area.

CAMPANULACEAE.

CAMPANULA.

C. aparinoides Pursh. Meadows and swamps, frequent.

C. GLOMERATA L. Dry fields and pastures, abundant along the Newburyport turnpike in Danvers and Topsfield since the days of William Oakes; also at Boxford, Danversport and Salem.

C. PERSICIFOLIA L. Persisting from garden and widely spreading in yard, Newton (*F. W. Grigg*, June 16, 1911 to date). Introduced from Europe.

C. RAPUNCULOIDES L. Spreading from old gardens to roadsides and waste places, common.

C. rotundifolia L. Riverbanks, ledges and fields, occasional north of Boston.

C. TRACHELIUM L. Persisting on dump, edge of marsh, Milton (*N. T. Kidder*, July 21, 1919). Specimen in herb. N. T. Kidder.

C. uliginosa Rydb. Meadows, swamps and marshes, frequent.

JASIONE.

J. MONTANA L. Gravelly bank, E. Lexington (*Miss H. M. Fay*, Oct. 3–10, 1916); dry soil, cemetery, Sherborn (*Miss M. L. Loomis*, July 31, 1913). Specimens in herb. W. Deane and herb. Boston Soc. Nat. Hist.

SPECULARIA.

S. perfoliata (L.) A. DC. Dry hillsides and ledges, common.

LOBELIACEAE.

LOBELIA.

L. cardinalis L. Brooks, swamps and pond shores, well distributed throughout, but in danger of extermination.

L. cardinalis L., forma **alba** (A. A. Eaton) St. John. See RHODORA xxi. 217–218, 1919. Lynn, Melrose, Bedford, Needham, Foxboro.

L. Dortmanna L. Ponds and wet shores, frequent throughout.

L. inflata L. Open ground in moist or dry soil, common throughout.

[A sheet of *L. Kalmii* in herb. N. E. Botanical Club, collected by E. S. Hoar in 1857 has the double label "Concord, July 8, 1857, or Hopkinton Springs, July 11–14, 1857." Both localities and dates are unlikely for this species.]

L. SIPHILITICA L. Introduced in low ground, Cambridge (*M. L. Fernald*, September, 1891). Specimens in herb. Gray and herb. N. E. Botanical Club.

L. spicata Lam. Fields and meadows, frequent throughout.

C. H. KNOWLTON
WALTER DEANE
} *Committee on Local Flora.*

THE CORRECT NAME FOR THE SPEARMINT.

OLIVER A. FARWELL.

IT HAS become quite general for American authors to discard the name *Mentha viridis* L. for *M. spicata* L. when writing of the Spearmint. This application of the name, *M. spicata*, seems to be unwar-

ranted. In the 1st edition of the Sp. Pl. p. 576 (1753) Linnaeus published the complex *M. spicata* as follows:

spicata. 2. MENTHA floribus spicatis, foliis oblongis serratis. *Hort. ups.* 168.
Mentha sylvestris, longioribus nigrioribus & minus incanis foliis. *Bauh. pin.* 227.

viridis. α. Mentha spicis solitariis interruptis, foliis lanceolatis serratis sessilibus. *Hort. cliff.* 306. *Roy. lugdb.* 325. *Dalib. paris.* 177.
Mentha angustifolia spicata. *Bauh. pin.* 227. Mentha III. IV. *Dod. pempt.* 95.
Mentha aquatica spicata, foliis oblongis viridibus serratis acuminatis. *Gron. virg.* 167.

longifolia. β. Mentha spicis confertis, foliis serratis tomentosis sessilibus. *Hort. cliff.* 306. *Roy. lugdb.* 325. *Dalib. paris.* 177. *Mat. med.* 279. *Gort. gelr.* 341.
Mentha sylvestris, folio longiore. *Bauh. pin.* 227. Menthastrum spicatum, folio longiore candicante. *Bauh. hist.* 3. p. 321.

rotundifolia. γ. Mentha sylvestris, rotundiore folio. *Bauh. pin.* 227. *Habitat in* Dania, Germania, Anglia, Gallia. ♃.

In the 2nd Edition of the Species Plantarum pages 804 and 805 (1762) Linnaeus lists the three following species in place of *M. spicata* and its varieties of the 1st Ed.

sylvestris. 1. MENTHA spicis oblongis, foliis oblongis tomentosis serratis sessilibus, staminibus corolla longioribus. *Hort. cliff.* 306. *Hort. ups.* 168. *Mat. med.* 279. *Dalib. paris.* 177. *Gort. gelr.* 341. *Huds. angl.* 221 [*M. longifolia*].
Mentha sylvestris, folio longiore. *Bauh. pin.* 227. Menthastrum spicatum, folio longiore candicante. *Bauh. hist.* 3. p. 321.
Habitat in Dania, Germania, Anglia, Gallia. ♃.
Folia albida.

viridis. 2. MENTHA spicis oblongis, foliis lanceolatis nudis serratis sessilibus, staminibus corolla longioribus. Mentha spicis solitariis interruptis, foliis lanceolatis serratis sessilibus. *Hort. cliff.* 306. *Roy. lugdb.* 325. *Huds. angl.* 221 [*M. spicata*].
Mentha angustifolia spicata. *Bauh. pin.* 227.

Mentha *Cam. epit.* 477.
Mentha III, IV. *Dod. pempt.* 95.
Mentha aquatica spicata, foliis oblongis viridibus serratis acuminatis. *Gron. virg.* 167.
Habitat in Germania, Anglia, Gallia. ♃.
Affinis nimium M. sylvestri, sed minor & glabra.

rotundifolia. 3. MENTHA spicis oblongis foliis subrotundis rugosis crenatis sessilibus. *Huds. angl.* 221.
Mentha sylvestris, rotundiore folio. *Bauh. pin.* 227.
Menthastrum, folio rugoso rotundiore, spontaneum, flore spicato odore gravi. *Bauh. hist.* 3. p. 219.
Habitat in Angliae *aquosis.* ♃.

A careful analysis and comparison of Linnaeus's treatment of this group of species in the two editions of the Species Plantarum will show (1) that the description of *M. sylvestris* is the description of the var. *longifolia*, enlarged and modified; (2) that the description of *M. viridis* is the description of the var. *viridis* enlarged and modified; (3) that *M. sylvestris* is a plant with white tomentose leaves and that *M. viridis* is a plant with green and glabrous leaves; (4) that of the eight citations under *M. sylvestris* six are from the var. *longifolia* and one from *M. spicata* the other being extraneous; (5) that of the seven citations under *M. viridis* 5 are from var. *viridis* (none from *M. spicata*), the others being extraneous. The only conclusion to be deduced from a consideration of the above is that *M. spicata* formed a part of *M. sylvestris* and not at all of *M. viridis*.

M. spicata was founded on Hort. ups. 168 [sp. no. 2] which is as follows:

2. MENTHA floribus spicatis, foliis oblongis serratis.
α. Mentha spicis confertis, foliis serratis sessilibus.
Hort. cliff. 306.
Mentha sylvestris, folio longiore. *Bauh. pin.* 227.
β. Mentha [etc. which is *M. viridis*].
Haec α foliis *est subtus villosis & tomentosis* . . . .

Excluding var. β. which is var. *viridis*, the above citations prove that *M. spicata* founded thereon, is identical with *M. sylvestris* the species with white or tomentose leaves.

The 2nd synonym under *M. spicata* evidently represents a plant with tomentose leaves and therefore can not, together with the binomial, be relegated to *M. viridis*, a plant with glabrous leaves.

Hudson in Flora Anglica, page 221 (1762), elevated the Linnaean varieties to specific rank, retaining the names *longifolia* and *rotundifolia* for these species respectively; but in raising the variety *viridis* to specific rank he discarded that name and transferred to this plant the specific name *spicata*. To summarize:—

I. *M. spicata* L. is a plant with tomentose leaves and therefore the binomial can not be applied to the Spearmint, a plant with glabrous leaves, well represented by the *Mentha angustifolia spicata* Bauhin.

II. *M. spicata* L., *M. longifolia* (L.) Huds. and *M. sylvestris* L. are based upon the same species, well represented by the *Mentha sylvestris, folio longiore* Bauhin, Pin. 227; *M. spicata* L., being the oldest name, is the valid one.

III. The synonymy of the Spearmint is as follows:—

MENTHA VIRIDIS (L.) L.

Mentha spicata L. var. *viridis*. L. Sp. Pl. 756, 1753.
Mentha spicata Huds. Fl. Angl. 221, 1762; Britt. & Brown Ill. Fl. III. 119, 1898 and 2nd ed. III, 149, 1913; Robins. & Fern. in Gray's New Manual, 710, 1908, not L. 1753.
Mentha viridis L. Sp. Pl. 2nd ed., 804, 1762.

Dept. of Botany, PARKE, DAVIS & Co., Detroit, Mich.

ERUCASTRUM POLLICHII IN WEST VIRGINIA.—The occurrence of *Erucastrum Pollichii* Schimp. & Spenn. in the United States was first recorded by Dr. B. L. Robinson,[1] on the basis of specimens collected along a street-car line at Milwaukee, Wisconsin, 18 Oct., 1903, by William Finger, and along a railroad at Sherborn, Massachusetts, 4 Sept., 1910, by Miss M. L. Loomis. In this paper the species was described and its synonymy listed. Soon afterward it was recorded by the writer[2] from the railroad yard at St. Albans, Vermont, where two specimens were collected on 22 Aug., 1911. So far as I am aware no specimens have since been recorded from the eastern States. On 17 Oct., 1919, I collected a single plant, now in

[1] RHODORA **13**: 10–12. 1911.
[2] RHODORA **16**: 40. 1914.

the National Herbarium, along the railroad at Harpers Ferry, West Virginia.

Although evidently sporadic and rare in the East, this European crucifer seems to have taken a foothold in North Dakota. It was first reported[1] as well established in the vicinity of Fargo, where it had been collected in Oct., 1909, by O. A. Stevens. H. F. Bergman,[2] in his "Flora of North Dakota," records it from along railroad tracks at Fargo, Grand Forks, and Walhalla. O. A. Stevens,[3] recording it from other localities, states that it "has now been found at many places, chiefly along the railroad tracks," and that "seeds have been identified in several samples of timothy and millet coming from near Grand Forks." A specimen collected by him at Fargo, Sept., 1912, is in the National Herbarium. In a recent letter, Mr. Stevens informs me that he has since found the plant at several localities in Minnesota near the North Dakota line—near East Grand Forks, at Moorhead, and in considerable abundance along the roadside near Sabin. During the past summer he also collected a specimen along a prairie trail in southern McKenzie County, western North Dakota, some 30 miles from a railroad.—S. F. Blake, Bureau of Plant Industry, Washington, D. C.

Pseudotaenidia in Maryland.—Hunnewell's recent reference (Rhodora **25**: 168. 1923) to this local plant has reminded me of a long neglected intention of reporting the genus from a station several miles north of its accredited home. September 14, 1917, while I was returning from a business trip into Western Maryland, operations of a highway construction gang enforced an unpremeditated stop of about half an hour at the western base of Polish Mountain, in Alleghany County, Maryland. Browsing around, to pass away the time, I found this rare and strange umbellifer, with the foliage of *Taenidia* and the fruit of *Pastinaca*. Seed only was collected, I not being prepared at that time to care for herbarium specimens. On September 10, 1918, a premeditated stop was made at this station, and then a few specimens were carefully stored away in a small press brought along for the purpose. As far as observed, the plants were scarce and scattered.

On this second trip, a large colony of *Taenidia integerrima* was found along this same highway, where it descends the eastern side of

[1] Ann. Rep. N. D. Agric. Exp. Stat. **22**: 80. 1912.
[2] Bienn. Rep. Agric. Coll. Surv. N. D. **6**: 194. 1918.
[3] Bull. Torrey Club **49**: 94. 1922.

Warrior Mountain, a ridge a few miles west of Polish Mountain. Seed only of this was taken.

More careful botanizing in this region might show *Pseudotaenidia* to be more common in Maryland than indicated by my accidental finding of a few plants. The species could easily be exterminated at this place. My specimens have been deposited with the Gray Herbarium, the California Academy of Science, and the Dudley Herbarium of Stanford University.—C. P. SMITH, San José, California.

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Farlow

Rhodora

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NOTES ON AMERICAN LESPEDEZAS.

S. F. Blake.

The following notes on bush clovers may be prefaced by a short account of the papers which have contributed most materially to our knowledge of the American forms of *Lespedeza*. The first good general treatment was that in Torrey and Gray's "Flora of North America."[1] In this the importance of the apetalous flowers in classification was pointed out for the first time, and the species were divided into the two primary groups which have been retained by all later writers. The synonymy of several species was corrected on the basis of Dr. Gray's investigations of type material, and a good foundation laid for subsequent study of the group. The specific units in this treatment were too broadly conceived, however, and the improvements introduced in Torrey and Gray's scheme by later authors have been mainly in the direction of a closer delimitation of species.

For more than half a century little change was made in Torrey and Gray's treatment. Maximowicz's[2] revision of the genus, published in 1873, followed in general the work of Torrey and Gray for the American species. *L. violàcea* and *L. reticulata* (=*L. virginica*), which had been considered conspecific by Torrey and Gray, were separated, *L. repens* and *L. procumbens* were united under the name *L. repens*, and *L. capitata* var. *angustifolia* Pursh was transferred to varietal rank under *L. hirta*. In 1876 Gray,[3] in connection with the

[1] Fl. N. Amer. **1:** 366–369. 1840.
[2] Act. Hort. Petrop. **2:** 327–388. 1873.
[3] Proc. Amer. Acad. **12:** 57. 1876.

publication of the unique *Lespedeza leptostachya* Engelm., treated *Lespedeza angustifolia* as specifically distinct from *L. capitata*, and briefly noted the diagnostic characters of the species of the *L. hirta* group.

Our present-day concept of the American species is based mainly on Britton's paper "The North American species of the genus Lespedeza,"[1] published in 1893. All of the twelve species here described are now generally adopted under the names used by Dr. Britton, with the single exception of *L. intermedia*, now called *L. frutescens;* and in this case, as shown further on (see no. 5), it is necessary to return to the name *L. intermedia*, in place of *L. frutescens* proposed by Britton in 1894. The account of "The Lespedezas of Missouri," published in 1902 by Mackenzie and Bush,[2] followed Britton's treatment rather closely, but contained descriptions and figures of three new species and a new variety, while a variety already proposed by Britton was raised to specific rank.

The last important contribution to the knowledge of American Lespedezas is contained in A. K. Schindler's "Einige Bemerkungen über Lespedeza Michx. und ihre nächsten Verwandten,"[3] which is based on work in the herbaria at London and Paris, as well as at Berlin. The nomenclature of several of the American species is discussed critically, after examination of the type specimens, and a table is given showing the modern equivalents of the names used in practically all papers of any importance referring to the genus. Latin descriptions of most of the American species are given, and attention is called to some differences in floral structure not sufficiently appreciated hitherto. The most novel fact brought out in Schindler's treatment is the occurrence of cleistogamous flowers in the group composed of *L. hirta* and related forms, which had previously been characterized in part by the supposed absence of such flowers.

1. LESPEDEZA PROCUMBENS var. **elliptica**, var. nov. Leaflets narrowly elliptic, nearly or quite four times as long as wide, the larger 1.8–3.4 cm. long, 4–9 mm. wide; otherwise similar to the typical form.

SPECIMENS EXAMINED: VIRGINIA: In dry meadow, near Lorton, Fairfax Co., 16 Sept. 1923, *S. F. Blake* 8621 (TYPE no. 1,111,347,

[1] Trans. N. Y. Acad. Sci. **12:** 57–68. 1893.
[2] Trans. Acad. Sci. St. Louis **12:** 11–19. *pl. 1–4.* 1902.
[3] Bot. Jahrb. **49:** 570–658. 1913.

U. S. National Herbarium; duplicate in the Gray Herbarium); same locality, 3 Oct. 1923, *Blake* 8653 (U. S., Gray, N. Y. Bot. Gard.); Point of Rocks, near Avoca, Altavista, Campbell Co., 7 Sept. 1913, *Juliet Fauntleroy* 632 (U. S.). ALABAMA: Near Mountain Home, Lawrence Co., 23 Sept. 1892, *C. Mohr* (U. S.).

In its numerous procumbent stems, up to 125 cm. long, its dense short spreading pubescence, its long-peduncled racemes of petaliferous flowers, its flower structure, and its pods, this plant agrees with typical *Lespedeza procumbens* Michx. In that plant, as shown by Michaux's

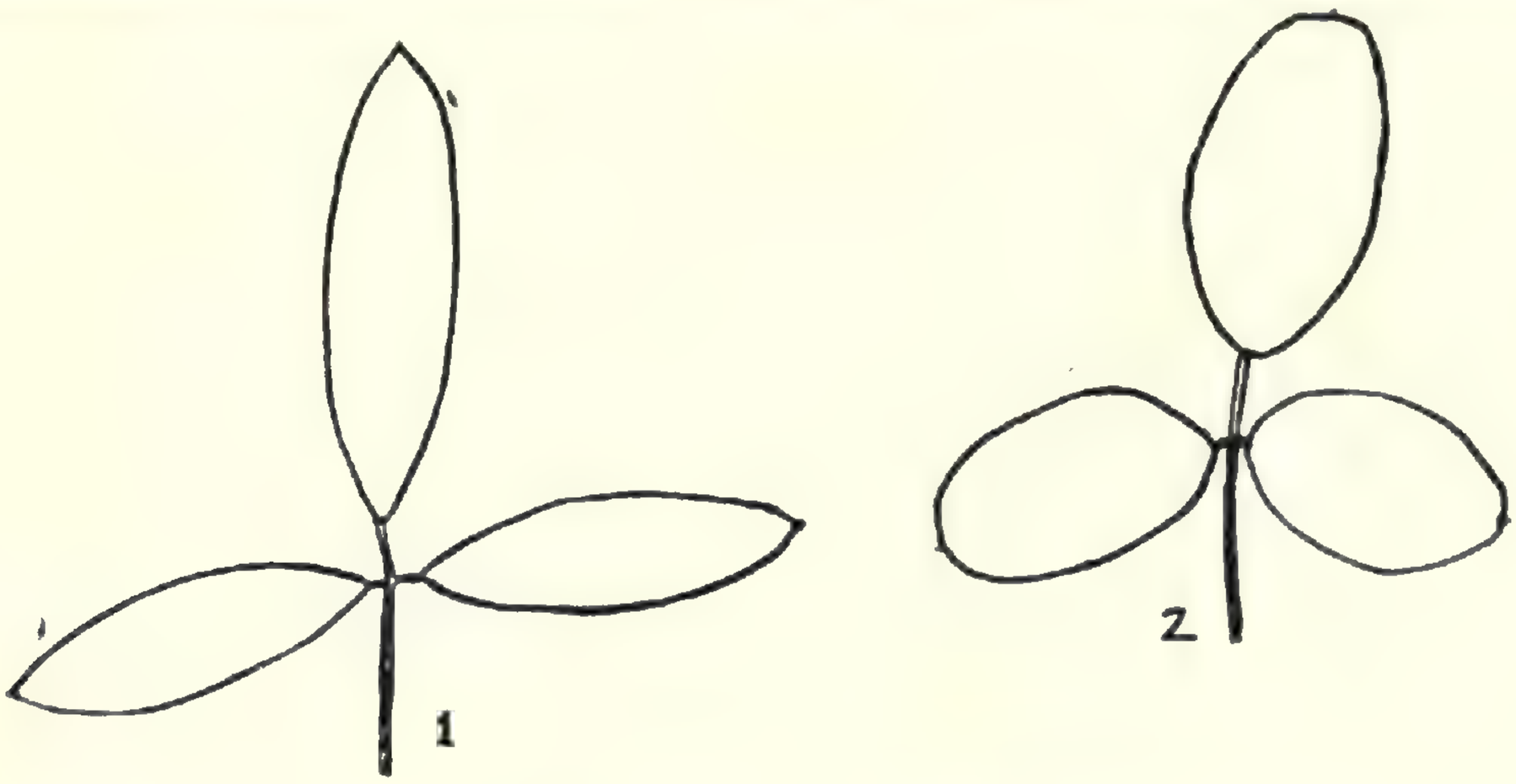

FIG. 1. Leaf of *L. procumbens* v. *elliptica* (Blake 8621) × 1.
FIG. 2. Leaf of *L. procumbens* (Bush 40) × 1.

original plate and by a long series of specimens, the leaflets are oval, not more than twice as long as wide, the larger 1.2–2.5 cm. long by 7–15 mm. wide. No specimens really intermediate between the typical form and the variety here described as new have been examined.

Lespedeza acuticarpa Mackenzie & Bush, Trans. Acad. Sci. St. Louis **12**: 16. *pl. 3.* 1902, from Missouri, appears to be related to *L. procumbens* var. *elliptica.* I have not seen the type collection, *Mackenzie* 449, but the specimen in the National Herbarium of *Bush* 67, the second number cited, is similar in most respects to var. *elliptica.* The plant is described as erect or suberect, while var. *elliptica* is truly procumbent or prostrate. Of later specimens in the National Herbarium distributed by Bush under the name *L. acuticarpa*, one sheet (*Bush* 6524) is *L. Stuevei* Nutt., while another (*Bush* 7886) is *L. intermedia* (Wats.) Britton.

2. LESPEDEZA VIOLACEA var. PRAIREA Mackenzie & Bush, Trans. Acad. Sci. St. Louis **12**: 14. *pl. 1.* 1902.—*Lespedeza prairea* Britton;

Small, Fl. S. E. U. S. ed. 1. 641, 1332. 1903.—This variety, originally distinguished from *L. violacea* by its smaller size, non-paniculate inflorescence, and much shorter pedicels, was raised to specific rank in Small's "Flora of the Southeastern United States", and separated in Small's key from *L. violacea* by its elongated peduncles, lax inflorescence, and shorter calyx lobes (about $\frac{1}{4}$ as long as the pod), *L. violacea* being distinguished by its short peduncles, close inflorescence, and calyx lobes about $\frac{1}{2}$ as long as the pod. Inasmuch as the long peduncles of *L. violacea* are one of its fundamental characters, it is difficult to consider them as distinctive of *prairea*. The difference in length of calyx lobes compared with the pod rests on no better foundation, since the short calyx lobes are those characteristic of the apetalous flowers, and the longer calyx lobes those of the petaliferous flowers. The greater part of the material of *L. violacea* in the National Herbarium from throughout the range of the species has the short calyx supposed to be characteristic of *L. prairea*. In this species the petaliferous flowers seem to perfect fruit only rarely.

The smaller leaflets and shorter pedicels ascribed to *L. violacea* var. *prairea* in the original description are not of any more rea consequence than the characters already discussed. Although the type number (*Bush* 93) and a few other specimens from Missouri have small leaflets (2 cm. long or less), they differ in no other way from *L. violacea*. A variety based on such a character, particularly when this reduction in size of leaflets can with much probability be associated with the difference in habitat (var. *prairea* being, according to Mackenzie & Bush, a plant of dry prairies, while *L. violacea*, according to the same authors, is found in rocky woods), seems altogether too artificial to be maintained. Later collections (*Bush* 3288 and 5108) distributed by Bush as *L. prairea* have leaflets 2–3 cm. long and are in no way distinguishable from ordinary *L. violacea* (L.) Pers. Schindler[1] refers *L. violacea prairea* to *L. violacea* without discussion.

3. LESPEDEZA STUEVEI Nutt. Gen. 2: 107. 1818.—The name of this species has almost universally been written *Lespedeza Sturei*. It was published by Nuttall in the form "*Stüvei*," which should be transcribed "*Stuevei*" in accordance with Recommendation XI. *e* of the International Rules, as is done by Schindler. The species was

[1] Bot. Jahrb. **49:** 613. 1913.

dedicated by Nuttall to "the memory of my friend W. Stuve, M. D., of Bremen, who discovered it."

4. LESPEDEZA STUEVEI var. ANGUSTIFOLIA Britton, Trans. N. Y. Acad. Sci. **12**: 63. 1893 (as *Stuvei*).—*Lespedeza Stuvei neglecta* Britton, Mem. Torr. Bot. Club **5**: 206. 1894. *Lespedeza neglecta* Mackenzie & Bush, Trans. Acad. Sci. St. Louis **12**: 17. 1902.—The new name *L. Stuvei neglecta* was given by Britton on account of the earlier *L. angustifolia* (Pursh) Ell., but this change is not required by either the International or the American Rules, under both of which *L. Stuvei* var. *angustifolia* is valid for the plant in its varietal rank.

The status of this form is problematical. In the densely short-pilose or almost tomentose stems and under leaf-surface it agrees with *L. Stuvei*, but the habit and the shape of the leaflets are essentially those of *L. virginica*, and it is possible that it represents a hybrid between these two species. In the original description the range of var. *angustifolia* was given as from New Jersey and Pennsylvania to North Carolina, Missouri, and Texas. Through the kindness of Dr. N. L. Britton, I have been able to examine two sheets of the original material, one from the pine barrens of New Jersey, without collector's name, marked "assigned type" by Dr. Britton, and one collected in the vicinity of Heilig's Mill P. O., Rowan Co., North Carolina, 13–18 Aug. 1891, by J. K. Small and A. A. Heller. There are two sheets in the National Herbarium, one collected at Knoxville, Tennessee, July 1898, by A. Ruth (no. 311), the other collected near Waldorf, Charles Co., Maryland, 30 Sept. 1923, by S. F. Blake (no. 8639). Another sheet of specimens collected at Coulterville, Illinois, 25 Aug. 1914, by W. H. Emig (no. 242), is so nearly intermediate between this plant and *L. virginica* that it is difficult to decide its proper position.

5. LESPEDEZA FRUTESCENS (L.) Britton, Mem. Torr. Bot. Club **5**: 205. 1894.—This name, based on *Hedysarum frutescens* L. Sp. Pl. **2**: 748. 1753, has for some years been in practically universal use for a common bush clover of the eastern United States closely related to *L. virginica*, and distinguished chiefly by its oval or oblong-oval leaflets. In his revision of the North American species of *Lespedeza*, Britton stated[1] that "the Linnaean *Hedysarum frutescens* is clearly the same plant [as *L. intermedia* Britton, *L. Stuvei* var. *intermedia* Wats.], as illustrated by the Gronovian specimen on which it is based

[1] Trans. N. Y. Acad. Sci. **12:** 64. 1893.

in the herbarium of the British Museum, bearing the following label, which is the name cited by Linnaeus: 'Hedysarum foliis ternatis subovatis, caule frutescente, Gron. Fl. Virg. 174.' " A. K. Schindler,[1] on the other hand, refers *Clayton* 174, on which Gronovius' reference is based, to *L. violacea* on the basis of its elongate keel, which he considers the only constant distinguishing character of *L. violacea*.[2] The plant which American authors, following Britton, have called *Lespedeza frutescens*, is considered by Schindler to be merely a variety of *L. virginica*, differing from that plant in its broader obtuse or retuse leaflets, looser branching, and fewer leaves, and is listed as *L. virginica* var. *sessiliflora* (Nutt.) Schindler (l. c. 616). Even if Schindler's reduction of the plant to varietal rank were correct, the name chosen is unfortunate. Nuttall's *L. sessiliflora* is clearly that of Michaux, although the latter's name is not cited under it, and the specimens in Michaux's herbarium, according to both Britton and Schindler, are *L. virginica* (α *typica* of Schindler), although his description[3] includes both *L. virginica* and *L. "frutescens."*

The plants currently called *L. virginica* and *L. frutescens* (Schindler's *L. virginica* var. α *typica* and var. β *sessiliflora*) are certainly very closely related, but they are nevertheless almost always readily recognizable in the field and in the herbarium, and may advantageously be retained as species. *Lespedeza "frutescens"* is a more freely and loosely branched plant, with less leafy stems and broader oval or oblong-oval rather than linear or linear-elliptic leaflets, and it frequently has longer peduncles. On the whole, the two plants are quite as well distinguished as other pairs of closely related species in the genus, and it does not seem desirable to follow Schindler in his reduction of *L. "frutescens"* to a variety of *L. virginica*.

[1] Bot. Jahrb. **49:** 591–2. 1913.

[2] "Das Blütenmerkmal, nämlich die lang hervorstehende Carina, hat er überhaupt nicht beachtet, und doch ist dies, nach dem so überaus reichen Material, das ich untersucht habe, das einzige, weil unter allen Umständen konstante, Merkmal der *L. violacea* gegenüber den verwandten Arten." (Schindler, l. c. 592.) The same character was used in Maximowicz's key (Act. Hort. Petrop. **2:** 358. 1873) to separate *L. violacea* from related species.

[3] Michx. Fl. Bor. Am. **2:** 70. 1803.

SESSILIFLORA. L. erecta: foliolis oblongis: fasciculis florum sessilibus, numerosis: leguminibus calyce minuto subnudatis, acutis.
HEDYSARUM *junceum*. WALT.
MEDICAGO *virginica*. LINN.
OBS. Variat foliolis latiuscule oblongo-ellipticis et sublinearibus tuncque HEDYSARO *junceo* congeneri subsimilis.
HAB. in Virginia et Carolina.

Schindler's reference of the type of *Hedysarum frutescens* to *Lespedeza violacea* is based on a character which seems to be really distinctive of this species. Examination of the material in the National Herbarium shows that in *L. violacea* the keel regularly exceeds both the banner and the lateral petals, rarely merely equaling the latter, while in *L. "frutescens"* the keel is distinctly shorter than the lateral petals and the banner. A new name must therefore be found for the plant which has been passing as *Lespedeza frutescens*. Michaux's *L. sessiliflora*, as shown above, included as to description both *L. virginica* and *L. "frutescens."* His specimens preserved at Paris, however, are properly to be taken as the types of his species, and as they are typical *L. virginica* according to both Britton and Schindler,[1] the name *Lespedeza sessiliflora* Michx. must be referred to the synonymy of *L. virginica* (L.) Britton. *Lespedeza reticulata* (Muhl.) Pers. has sometimes been referred to *L. "frutescens,"* but the type in Willdenow's herbarium is *L. virginica* var. *typica*, according to Schindler. The name to be used for *L. frutescens* of authors (for example, Gray's Manual ed. 7 and Britton & Brown's Illustrated Flora) is LESPEDEZA INTERMEDIA (Wats.) Britton, Trans. N. Y. Acad. Sci. **12**: 63. 1893, based on *L. Stuvei* var. *intermedia* Wats. in Gray, Manual ed. 6. 141. 1889.

It may be noted in passing that the binomial *Lespedeza frutescens*, commonly quoted from Britton, Mem. Torr. Bot. Club **5**: 205. 1894, had been previously made independently by Hornemann in 1815[2] (omitted in Index Kewensis), by Elliott[3] in 1822, and by de Candolle[4] in 1825, and that in each case reference is made to the name-bringing synonym *Hedysarum frutescens* L. (except in the case of Hornemann, where the reference is to Willd. Sp. Pl., which is based on Linnaeus). In each case the plant described is *L. capitata* Michx., but on the principle generally followed, at least by American authors, that the application of a name in such cases is to be determined by the name-bringing synonym and not by the description, the combination *Lespedeza frutescens* (L.) should be ascribed to Hornemann.

[1] According to Schindler (l. c. 631) the material in Michaux's herbarium under the name *L. sessiliflora* consists of two specimens of *L. virginica α typica* and a capsule of the Old World *L. juncea* (L.) Pers., but the latter is obviously not connected with Michaux's description.

[2] Hort. Reg. Bot. Hafn. **2:** 699. 1815.

[3] Sketch Bot. S. C. & Ga. **2:** 206. 1822.

[4] Prodr. **2:** 329. 1825.

6. LESPEDEZA INTERMEDIA var. **Hahnii**, var. nov. Stem and branches densely hispidulous-puberulous with wide-spreading to somewhat ascending hairs; otherwise as in the typical form.

SPECIMENS EXAMINED: INDIANA: Vicinity of Bascom, August 1906, *W. L. Hahn* (TYPE no. 609738, U. S. National Herbarium).

The typical form of this species is so consistently appressed-puberulous or strigillose on the stem and branches that the form with spreading pubescence seems to merit recognition by name. The specimens examined are closely similar to typical examples of *L. intermedia* in all other features, being densely leafy, with short-petioled leaves of oval retuse leaflets, these strigose beneath, and sessile or subsessile clusters of flowers. The varietal name is given in memory of the collector, Dr. Walter L. Hahn, who died from over-exposure in 1911 while serving as naturalist for the Bureau of Fisheries in the Pribilof Islands.

7. LESPEDEZA HIRTA var. **appressipilis**, var. nov. Stem and leaves finely pubescent with appressed hairs; leaflets obovate to oval, the larger 1.3–2 cm. long, 5–12 mm. wide, usually retuse, mucronulate.

SPECIMENS EXAMINED: FLORIDA: Dry pine barrens, near Jacksonville, 25 Sept. and 20 Oct. 1896, *A. H. Curtiss* 5780 in part (U. S.); dry pine barrens, Duval Co., October, *Curtiss* 639 (TYPE no. 517623, U. S. National Herbarium); Clarcona, Orange Co., 25 Sept. 1899, *Marie Meislahn* 62 (U. S.).

Like its near relative *L. capitata* Michx., *Lespedeza hirta* (L.) Hornem. is a very variable species. The variety here distinguished as new, chiefly on the nature of its pubescence, grades into the typical spreading-pilose *L. hirta* through various specimens from the Southern States. It is also closely allied to *L. angustifolia* (Pursh) Ell., agreeing with it in pubescence and differing chiefly in its broader obovate or oval leaflets. No intermediate specimens connecting it with *L. angustifolia* have been seen.

Lespedeza angustifolia var. *brevifolia* Britton, Trans. N. Y. Acad. Sci. **12**: 68. 1893, based on material collected by Chapman in Florida, seems scarcely distinct enough from typical *L. angustifolia* to require recognition in nomenclature. A sheet of the type material lent from the New York Botanical Garden herbarium, collected at Campbellton, western Florida, by Dr. Chapman, has the leaflets of the middle leaves up to 2.2 cm. long and 2.5 mm. wide, thus no shorter than is common in leaves of the middle portion of the stem in this species.

8. Since the time of Torrey & Gray,[1] the primary division of the native American species of *Lespedeza* has been into two groups; one (Section *Eulespedeza* Torr. & Gray), with two kinds of flowers (complete but usually infertile flowers in pedunculate to sessile racemes or clusters, and apetalous but very fertile flowers, these either in sessile axillary clusters or intermixed with the petaliferous ones), calyx usually much shorter than the corolla and pod, and violet or purple corollas; the other (Section *Lespedezaria* Torr. & Gray) with the flowers all alike and complete in dense spikes or heads, calyx as long as the pod or longer, and whitish or ochroleucous corollas bearing a purple spot on the banner. These two groups are for the most part well defined, although apparently connected by the two little-known species *Lespedeza Mamniana* and *L. simulata* Mackenzie & Bush. These have much the appearance of *L. capitata*, with an inflorescence of petaliferous flowers more like that of species of the *Eulespedeza* group, and axillary clusters of apetalous flowers; the sepals are long, as in the *L. capitata* group, and the flowers purple as in the *Eulespedeza* group.

In his paper on the genus Schindler pointed out that one of the traditional differences between the two groups of American species —the presence of cleistogamous flowers in the purple-flowered species, and their absence in the whitish-flowered species—has no existence in nature. He states[2] that he has been able to determine the presence of "apopetale Blüten mit parthenogonischen Früchten" in *L. hirta* (in which he includes as a variety *L. angustifolia*) and *L. capitata*. In the specimens of *L. hirta*, *L. capitata*, and *L. angustifolia* examined, I have found no flowers with corolla and stamens so greatly reduced as is common in the purple-flowered species. In all three species, however, it is easy to find intermixed in the spikes cleistogamous flowers with reduced corolla, strongly hooked style, very short staminal sheath, and anthers dehiscing in the bud. The fruits of these cleistogamous flowers can be distinguished by the very short sheath of the persistent stamens and the short hooked style, often with a stamen adhering to the stigma. In the very distinct *Lespedeza leptostachya* Engelm.,[3] the remaining species of this group, the flowers, while

[1] Fl. N. Amer. **1:** 366–369 1840.

[2] Bot. Jahrb. **49:** 574. 1913

[3] The leaves of all Lespedezas are regularly pinnately 3-foliolate. Two specimens of *L. leptostachya* in the National Herbarium bear single 4-foliolate leaves and one of them has a 5-foliolate leaf. These abnormal leaves represent a combination of the pinnate and di.itate modes, the terminal leaflet being borne on a short rachis, the others merely petiolulate at the apex of the petiole.

complete, are apparently usually cleistogamous. In the eight sheets examined in the National Herbarium, all collected in Emmet County, Iowa, by R. I. Cratty, very few flowers with fully developed corolla and stamens have been found.

In the purple-flowered group all gradations exist between the nearly or quite apetalous flowers, with stamens greatly reduced or perhaps sometimes entirely wanting, and the petaliferous flowers. The presence of cleistogamous flowers in all four species of the *L. hirta* group, and their extreme development in *L. leptostachya*, make it necessary to abandon this character in the future in distinguishing our two groups of species.

BUREAU OF PLANT INDUSTRY,
Washington, D. C.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLIII.

COMPOSITAE.

ACANTHOSPERMUM.

A. AUSTRALE (Loefl.) Ktze. See RHODORA ix. 26, 1907. Cabbage field, from woolwaste, Lawrence (*Mrs. E. S. Schneider*, no date); S. Boston flats (*C. E. Perkins*, (?) Sept. 25, 1881).

ACHILLAEA.

A. LANULOSA Nutt. Dry sandy soil, rare; Newbury, Manchester, Revere, Malden, Wellesley, Readville.

A. MILLEFOLIUM L. Dry fields and roadsides, very common throughout.

A. PTARMICA L. Moist soil, spontaneous in gardens and escaped; Danvers, Lynn, Salem, Jamaica Plain.

A. TOMENTOSA L. Woolwaste, Westford (*Miss E. F. Fletcher*, 1884 et seq.). Specimen in herb. Gray. See RHODORA x. 127, 1908.

AGERATUM.

A. HOUSTONIANUM Mill. (*A. mexicanum* Sims.) Lynn (*E. & C. E. Faxon*, Sept. 23, 1880). Specimen in herb. Gray. Native of Mexico.

AMBROSIA.

A. APTERA DC. Huntington Ave., Boston (*Wm. Boott*, Sept. 12, 1879; *C. E. Perkins*, Sept. 20, 1880); waste land, S. Boston (*C. E. Faxon*, Sept. 30, 1878; *H. A. Young*, Sept. 25, 1879); Sharon (*S. F. Poole*, September, 1900). Range from Texas to Arizona and adjacent Mexico.

A. ARTEMISIIFOLIA L. Dry fields and roadsides, too common throughout.

A. TRIFIDA L. Waste places, occasional from Milton and Boston west and north.

A. TRIFIDA L., var. INTEGRIFOLIA (Muhl.) T. & G. Sidewalk, Brewster Place, Cambridge (*W. Deane*, Aug. 17, 1888); grassland, Sherborn (*Miss M. L. Loomis*, Aug. 9, 1911).

ANAPHALIS.

A. margaritacea (L.) B. & H. Dry upland, frequent throughout

ANTENNARIA.

A. canadensis Greene. Dry fields and hillsides, common.

A. fallax Greene. Dry open places, common throughout.

A. neglecta Greene. Fields, common throughout.

A. neodioica Greene. Dry fields and open woods, common throughout.

A. neodioica Greene, var. **grandis** Fernald. Off Clark Road, Brookline (*F. F. Forbes*, May 25, June 6, 1904). Specimens in herb. Gray.

A. occidentalis Greene. Sterile field, Hamilton (*F. T. Hubbard*, June 14, 1913); clay roadside, Wakefield (*R. C. Bean*, June 3, 1916 et al. to date); dry field, Halifax (*A. S. Pease*, May 30, 1907); dry soil, Sherborn (*Miss M. L. Loomis*, May 19, 1911).

A. Parlinii Fernald. Dry open woods and fields; frequent from Boston north and west.

A. petaloidea Fernald. Dry hillside, Lexington (*M. L. Fernald*, May 11, 1913); N. Easton (*A. A. Eaton*, May 21, 1903).

A. plantaginifolia (L.) Richards. Dry soil, common throughout.

A. plantaginifolia (L.) Richards., var. **petiolata** (Fernald) Heller. Nine stations north and west of Boston. See Muhlenbergia i. 5. 1900

ANTHEMIS.

A. ARVENSIS L. Waste places, occasional.

A. ARVENSIS L., var. AGRESTIS (Wallr.) DC. Waste places, occasional.

A. COTULA L. Roadsides and waste places, common.

A. TINCTORIA L. Roadside thicket, Rockport (*M. L. Fernald, F. W. Hunnewell & B. Long*, Sept. 11, 1913); Magnolia [Gloucester–Manchester] (*Miss Cora H. Clark*, July 4, 1906).

ARCTIUM.

See Fernald & Wiegand, in RHODORA xii. 43–47, 1910.

A. LAPPA L. Waste land, occasional, especially near Boston.

A. MINUS (Hill) Bernh. Waste land, very common.

A. NEMOROSUM Lejeune. Waste land, rare; Gloucester, Brighton, Cambridge, Boston, Sherborn.

A. TOMENTOSUM Mill. Vacant lot, Cambridge, now eradicated (*W. Deane* et al., July 16, 1885 to 1910); field where rubbish had been dumped, Westford (*Miss E. F. Fletcher*, July 12, 21, 1909).

ARTEMISIA.

A. ABSINTHIUM L. Escaped from gardens, occasional.

A. BIENNIS Willd. Waste land, very abundant in and about Boston, rare elsewhere.

A. ANNUA L. Salem (*E. S. Rogers*, September, 1876); near woolen mill, Medford (*F. W. Grigg*, Oct. 13, 22, 1919).

A. caudata Michx. Seashore and sandy fields along the coast from Salisbury to Duxbury.

A. LUDOVICIANA Nutt. Waste land, introduced and thriving, Newbury (*E. F. Williams*, Aug. 7, 1899). Specimens in herb. Gray and N. E. Botanical Club.

A. PONTICA L. Escaped to roadsides and waste places, rare; Newbury, Tewksbury, Medford. Native of Caucasus region, and Soongaria in central Asia.

A. STELLERIANA Bess. Sandy sea-beaches from Ipswich to Duxbury; also garden escape at Tewksbury (*C. W. Swan*, July 10, 1883).

A. VULGARIS L. Waste places, common.

C. H. KNOWLTON, WALTER DEANE } *Committee on Local Flora.*

ELEOCHARIS TUBERCULOSA IN NEW HAMPSHIRE.

Arthur Stanley Pease.

On 28 July, 1923, I chanced to be detained for a few hours in the rain at Mt. Whittier (West Ossipee), N. H., and recollecting that a fisherman had told me that White Lake in Tamworth was lined by a sandy beach I decided to improve the time by hunting it up. The pond lies about a mile from West Ossipee village, in the midst of wooded sandy plains which are characteristic of much of the country immediately to the south of Chocorua and Pequawket Mountains. It rained too hard for me to explore much of the strand, but at one point, on the southwest side, at the upper edge of a beach of fine white sand, I came upon two plants which struck me as novelties for the region, one being *Xyris caroliniana* Walt. and the other an *Eleocharis* unfamiliar to me. This, when I was later able to examine it with a lens, proved to be *E. tuberculosa* (Michx.) R. & S., made perfectly distinctive, though still very immature, by the enormous tubercles upon the achenes. This species has not been previously reported north of Massachusetts, save for its discovery by Messrs. Fernald and Long in Shelburne Co., N. S., and it seemed worth while to secure better material. Accordingly on 23 August I visited White Lake again, finding the *Eleocharis* in excellent condition and the *Xyris* in fruit, with *Cyperus dentatus* Torr. and *Solidago tenuifolia* Pursh nearby, on the upper edge of the beach. Among the dense yellow masses of *Gratiola aurea* Muhl. which covered other parts of the damp sands was a considerable area of a form with creamy white flowers, forma *helveola* Bartlett, and near it, just above or just below the water-line, *Isoetes Tuckermani* A. Br. and *Myriophyllum tenellum* Bigel., while in the shallow water on the sandy bottom *Elatine minima* (Nutt.) Fisch. & Meyer was abundant.

Encouraged by these outliers of the coastal plain flora at the very foot of the White Mountains, I then visited some of the other ponds and lakes in the region. On the west side of Lake Ossipee I was rewarded by finding, on the sandy beaches, not only *Solidago tenuifolia*, as at White Lake, but also *Panicum spretum* Schultes, *Hemicarpha micrantha* (Vahl) Pax (which I had previously found in abundance near the monument commemorating Lovewell's fight with the Indians, at the north end of Lovewell Pond in Fryeburg, Maine), and *Eleocharis diandra* C. Wright, known from the sands of the lower

Androscoggin, the lower Merrimac, and well inland along the Connecticut. Notable also, though not abundant, was *Scirpus Smithii* Gray. In a previous visit, at the northwest corner of Lake Ossipee, I had found *Myriophyllum tenellum* also.

Province Lake in Wakefield proved, at least on its sandy southern side, where I was able to examine it, of less interest, though *Solidago tenuifolia* was present there, as I fancy it is at many of the ponds of the region (I have found it at Lovewell Pond and at Silver Lake in Madison). More interesting to me, however, and more common than at the other ponds I visited was *Scirpus Smithii*, and not far from it, abundant but not at all conspicuous, was *Subularia aquatica* L., a representative of a northern aquatic flora appearing a little out of place among its coastal plain neighbors.

A few moments of collecting on the west shore of Mirror Lake in Tuftonborough yielded *Subularia* and *Myriophyllum tenellum* again, and a single plant of *Scirpus Smithii* was the first thing to greet me on the sandy north end of Lake Wentworth in Wolfeborough, where approaching dusk cut short my collecting just when it began to promise well.

These interesting features of a hasty sampling, during parts of two days, of very restricted portions of a few of the many ponds in the east central region of New Hampshire suggest that more prolonged and careful investigation might furnish valuable and perhaps surprising results for our knowledge of the distribution of coastal plain extensions in a district comparatively neglected by botanical collectors. Specimens of the plants mentioned in this article have been deposited in the herbarium of the New England Botanical Club, and for assistance in the determination and verification of several of them I am greatly indebted to Professor Fernald.

URBANA, ILLINOIS.

TWO MORE WOOL-WASTE PLANTS FROM WESTFORD, MASS.—In going over the herbarium of the late Emily F. Fletcher, two wool-waste plants have been detected which it may be worth while to record by way of completing the list of her "finds" published by her-

self and in various installments of the *Flora of the Boston District*.[1] A necessarily hasty search in literature indicates that neither plant has been noticed before in North America.

1. Agrimonia Eupatoria L. This species is widely distributed in the Eurasian continent. It resembles our native *A. gryposepala* in that the stem and the rachis of the inflorescence are clothed with minute glandular puberulence mixed with long, non-glandular hairs. It is readily recognized, however, by its commonly more compact habit, the lower internodes of the stem tending to be short, thus bringing the leaves close together, by its generally smaller leaflets, and by the characters of the fruiting calyx. The body of the mature hypanthium is rather narrowly top-shaped and measures from the base to the point of insertion of the hooked bristles about 5 mm. In *A. gryposepala* the corresponding measurement is about 3 mm. and the hypanthium is very broadly turbinate. Miss Fletcher's label gives no information as to the circumstances under which the plant was found, but the nature of its fruit marks it as a likely subject for introduction with wool.

2. Verbascum thapsiforme Schrad. This is a native of central Europe, known in Germany as "wild tobacco." It seems a rather critical species, but is maintained as a species in nearly all recent European floras. It is closely related to *V. phlomoides*, from which it differs principally in its long-decurrent leaves, the wings of the stem formed by them extending from the point of insertion of each leaf to that of the one below. From *V. Thapsus* it differs, as does *V. phlomoides*, in its larger flowers (3–4 cm. in diameter), in its spatulate and decurrent (instead of capitate) stigmas, and in the large anthers (3.5–4 mm. long) of the two longer (inferior) stamens, which are inserted laterally on the filament. The smaller anthers of the inferior stamens of *V. Thapsus* are inserted obliquely across the apex of the filament.

According to Miss Fletcher's label, there was "an eighth of an acre" of the plant at Westford when she collected it in September, 1911. A fragmentary specimen in the herbarium of the New England Botanical Club, collected at Georgetown, Mass., by Mrs. C. N. S. Horner, may also be referable to *V. thapsiforme*.—C. A. Weatherby, Gray Herbarium.

[1] For an account of Miss Fletcher and her work, see Rhodora xxv. 149–150, Sept., 1923.

Gentiana linearis, var. latifolia in Maine.—In September, 1922, two or three tall stalks of a plant which I immediately saw to be an unfamiliar gentian were brought to me out of the woods. There had already been killing frosts, and the flowers were brown and withered, but they could be referred only to *Gentiana linearis*, var. *latifolia*, as described in the latest edition of Gray's Manual. Last year (1923) I visited both in August and in September the locality in the town of Norridgewock from which the plants had come. It is on a farm remote from the highway, and the plants were found along the edge of extended woods, upon a strip of land which had been cleared and had grown up with numerous young elms, some of them a dozen or fifteen feet high, together with a scattering of gray birch and scrub willows. The ground was covered with close-set rounded stones, well sodded and overgrown with grasses and old field plants, principally asters, solidagos and Joe-Pye weed. The gentians were growing in loose groups of four to a dozen each, generally underneath and quite near a tree, or beside an old fence. They stood high, a good part of them from two to three feet, and each stalk bore a large cluster of rather dull blue flowers, already on September 14 a little passed. They extended over quite a space, and were abundant enough so that the twenty or more I gathered made slight impression. I discovered a couple of months later that each flower-cluster had harbored a larva, which had worked in the press and eaten out the heart of the cluster. Prof. M. L. Fernald of the Gray Herbarium informs me that this is the first time this gentian has been reported from New England, although it or a similar form has been found in New Brunswick and on Lake Superior.—Louise Helen Coburn, Skowhegan, Maine.

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JOURNAL OF

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MISS DAY.

B. L. Robinson.

(With portrait.)

Mary Anna Day, for thirty-one years librarian of the Gray Herbarium, died at Cambridge, Massachusetts, January 27, 1924, in her seventy-second year. She never regarded herself as a botanist —indeed, she always approached the identification even of the commonest plants with much diffidence—yet from her extraordinary familiarity with botanical literature, keen interest in the progress and history of botany, and long service in close and helpful relation to botanical research she became a notable figure in American science.

It is customary to seek explanation of special talent in some marked personal taste, innate urge, early training, or at least in favorable environment during formative years. In most cases such contributing influences can doubtless be found. It was not so with Miss Day, and her long and successful career becomes the more remarkable from the fact that she lived more than half her life without the slightest impulse toward any natural science or the least foreknowledge that botanical literature was to become the subject of her chief interest and for many years of her unremitted activity.

She was born, of colonial ancestry, in the little hill town of Nelson in Cheshire County, New Hampshire, October 12, 1852. She was the daughter of Sewell and Hannah (Wilson) Day.[1] In personality she is said to have inherited many traits from her mother's side and

[1] It is learned from her relatives that Miss Day was christened Mary Annah, but in maturity she usually indicated her middle name merely by an initial and on the rare occasions when it was written out spelled it without the final h.

one of those was, unfortunately, a reluctance to speak much about her own experiences. It thus happens that even those who worked in her company for many years knew little of her earlier life and activities. The Day family moved from Nelson during the Civil War and took up their residence at Lancaster, Massachusetts, and it was in the Lancaster Academy that Miss Day received her education in the later sixties. From 1871 to 1878 she taught in the Massachusetts public schools, first at Sudbury, then in Clinton, where she later was for six years the first assistant in the Clinton Public Library. Here she also acquired some experience as an accountant.

In the autumn of 1892, from a desire to improve her position, she wrote to Mr. W. C. Lane, the Librarian of Harvard College, asking whether she would be eligible for work in his staff. It happened that the librarian of the Gray Herbarium, Miss Josephine A. Clark, had just accepted a call to the United States Department of Agriculture, and Miss Day's application, together with several others, was referred to the Curator of the Herbarium while he was considering candidates to fill the vacancy. Though brief and formal her note was striking from the unusual excellence of its writing, which was a "library hand" in the best sense, combining regularity and perfect clearness with individuality and strength. She was invited to a conference, came promptly, and produced a decidedly favorable impression. It was evident—indeed she took conscientious pains to make it so—that she knew nothing of botany or of botanical literature beyond the titles of three or four current text-books; but she had had practical experience in library work and it soon became clear that she had a special genius for all matters relating to records, files, accounts, and the like.

As to appearance she was of medium height and slight in build, suggesting "wiriness" rather than robust health. Her hair was already graying and without being asked she stated her age to be forty. She conveyed the impression of capability, evenness of temper, and of probable industry, with a goodly dash of the "New England conscience." Offsetting her inexperience in botany she showed more than ordinary confidence that she could make good if allowed to try and perfect herself in this new field. Being by far the most promising of the available candidates Miss Day was given the position, for which the salary was lamentably small. She came to Cambridge, and began her work at the Herbarium, January 1, 1893.

The establishment was then housed in a small story-and-a-half brick structure between the Gray frame residence and a small laboratory and auditorium, which in their turn adjoined the conservatories. Inadequate as was its building, the Herbarium was even less well endowed than housed, and at the time was meeting a rather appalling annual deficit. The library, already notable from the rarity of many of its works, was sadly cramped in shelving and had grown Topsy fashion, books being inserted on the principle of temporary convenience rather than any logical system. The previous librarian, Miss Clark, well trained at the Albany Library School, had sought to bring it into order, but her tenure had been short, the cramped conditions had hampered progress, and she had never been given much freedom in making changes in the shelving. Conditions could not have been very encouraging for a new incumbent. However, Miss Day took up her work with good courage.

The Curator was then engaged in completing, editing and preparing for press the posthumous manuscripts of Dr. Asa Gray and Dr. Sereno Watson in continuation of the Synoptical Flora of North America and had one fascicle fairly advanced. Miss Day was given as her initial task the verification of some 5000 bibliographical references in this work! In later years she often referred to this with amusement but admitted that no more immediate or effective plunge into her new activities could have been devised. It had been her own wish to begin with the cataloguing and reshelving of the library, but as she afterwards testified she could have done no very satisfactory work in such ways until she had acquired practice in the actual use of a technical reference library, and just this exercise in the verification of many citations gave her the needful experience, teaching her the relative importance of different works, the meaning of countless abbreviations, the significance of synonymy, the geographic relation of floras, value of priority in nomenclature, and such matters fundamental to scientific taxonomy.

She plowed through this task conscientiously and with great patience and good humor, quickly recognizing errors when called to her attention and not rarely suggesting improvements in the citations. She was almost immediately interested in the work and alert to perfect its details. She studied punctuation and typography as a fine art and soon came to have a correct feeling for all such matters, which made her later very expert as a proof-reader.

At this period the financing of the Herbarium became a pressing matter. A Visiting Committee was appointed, and a vigorous campaign for endowment initiated. In these matters Miss Day, who was called upon to keep all the records and accounts, took a lively and exceedingly helpful interest. Indeed, from that time she carried very effectively the statistical side of the work at the Herbarium, not merely as to budget, but regarding the growth of the collections, data for the annual report, summation and balancing of exchanges, and the like, all of them matters requiring unflagging attention to secure proper accuracy.

In 1895 the New England Botanical Club was formed and Miss Day, already acquainted with most of the charter members, was cordially interested in the organization. When the Club started its journal some four years later, she was one of the earliest contributors to the publication, preparing for it her list of the "Local Floras of New England" and "Herbariums of New England," papers which have been subject to much reference and have been decidedly useful in the work of the Club. For many years she prepared the index for Rhodora, at first declining remuneration for this considerable service.

For a few years Miss Day devoted a part of her brief summer outings to botanical field-work and brought back creditable collections from Manchester, Vermont, in 1898 (2900 specimens), Nantucket in 1900 (700 specimens), Adams in Berkshire County, Massachusetts, in 1901 (600 specimens), with lesser gatherings of later date from East Andover and Deerfield. She also aided in collecting some of the plants for the *Exsiccatae Grayanae*.

For nearly ten years the major part of the activity at the Herbarium was directed to the revision, indeed almost the rewriting, of Gray's Manual. This involved no end of bibliographical work and on that side of the undertaking Miss Day's aid was constant and invaluable, as it was later in the verification and proof-reading.

Then came the period from 1909–1915 during which through the liberality of the devoted Visiting Committee the Gray Herbarium was able to rebuild and greatly enlarge its plant. The reconstruction was carried forward a section at a time. The scientific work meanwhile went on continuously and the collections, books, catalogues and files had to be shifted several times from one part of the building to another, always kept accessible for reference, guarded against confusion, and protected from dust. It was a strenuous time for the

small staff and in this work also Miss Day showed much executive capacity. As one of her fellow-workers once remarked she was "never happier than when confronted by some clearing-up job."

Her satisfaction in the new quarters as they emerged from the turmoil of building operations was touching. Then for the first time could the books which had been crowded two and three deep upon the shelves be given logical arrangement. Long and carefully did Miss Day study the problems involved. The obsolete plan of "fixed shelf numbering" was abandoned and a new "expansive system" devised permitting the easiest possible interpolation of accessions. The labeling of the books was similarly studied to secure the best combination of simplicity, neatness, and clarity. The proper binding and treatment of pamphlets came in for careful attention. The whole catalogue had to be made over. The files of records, correspondence, labels, maps, exsiccatae-lists and autograph manuscripts, all were carefully subjected to reordering as they were placed in their new filing receptacles.

It had been fortunately possible to give Miss Day for her personal use one of the private offices. There she installed the historic files of the older correspondence, the very numerous filed botanical portraits, the records of some 250 botanical exploring expeditions and what she called her "gossip corner." This last was made up of documents individually of trifling value and temporary significance but in combination rather remarkable—announcements and programs of botanical meetings of many organizations, accounts of scientific celebrations, prospectuses of botanical summer schools, notices about field excursions, applications for scientific funds, menus of botanical banquets, and newspaper clippings regarding botanical events and discoveries. During her last weeks at the Herbarium, when impaired health had sadly depleted her strength, she turned to this heterogeneous accumulation and gave it remarkably neat, compact, and lucid arrangement so that at a moment's notice it is now possible to turn, for instance, to the announcements of any one of many organizations at any particular date. It is of interest to note that even during the brief period since her death there have been several occasions on which it has become necessary to refer to this collection to secure much needed data in the course of scientific publication, thus justifying Miss Day's confidence that it would prove useful.

Miss Day's largest bibliographical work, a task which extended through twenty years, was the "Card Index of New Genera, Species and Varieties of American Plants." This publication had been planned and carried through the first twenty issues (including about 28,000 cards) by Miss Clark at Washington between 1894 and 1903, at first by herself but later with Miss Day's collaboration. In 1903 it was formally turned over by Miss Clark with its good will to the Gray Herbarium.

To grasp the magnitude of this task it is necessary to understand that it involved the indexing page by page of more than 130 scientific serials through many years, as well as very numerous monographs, published in all parts of the world and in many languages, for American plants are often given their first scientific description or are still more frequently renamed quite incidentally and inconspicuously in works relating primarily to the flora of some remote portion of the Old World. Indeed, until recently, the major part of the botanical literature relating to South America was published from European establishments. The Index was brought out in quarterly issues ranging from 1000 to 2500 cards each. About eighteen of the duplicate sets were sold to the leading botanical establishments throughout the country and in Europe. In the verification and proof-reading Miss Day had the effective aid of Miss Edith M. Vincent, the assistant librarian, but by far the greater part of the actual indexing was done by herself. When she relinquished her task last November the Index contained nearly 170,000 cards, each carrying its bibliographical reference or its message regarding synonymy, each bearing data sought out and recorded individually. It should be borne in mind that this great work was merely incidental in Miss Day's routine, a species of knitting work, carried on in the intervals between many other duties. Fortunately she had the gratification of seeing the Card Index become increasingly useful and to know that it was finally regarded as a well nigh indispensable feature in the equipment of any establishment seriously engaged on American botanical classification.

During much of her life in Cambridge Miss Day was fortunate in having the companionship of a sister, Miss Helen E. Day, and the two kept house together. Miss Helen Day acquired a wider social acquaintance than Miss Mary and became much valued for her helpful services in various charitable and philanthropic enterprises. The two sisters traveled in Europe in the summer of 1907 and their journey

included visits to Kew, the British Museum of Natural History, the Jardin des Plantes in Paris and the great botanical establishments in Geneva. In 1911 they made another trip to Europe in company with a third sister, the wife of the Rev. Burke F. Leavitt. There is no doubt that Miss Day much enjoyed these journeys and that they considerably broadened her interests but she rarely spoke of them.

After the death of her sister Helen, Miss Day made her home with Mr. and Mrs. Leavitt who had come to Cambridge on his retirement after long service in the ministry. It thus was possible for Miss Day to have the comforts of a home and consolation of being among near relatives during the three months of her final illness.

Miss Day's position at the Herbarium brought her a wide acquaintance—students puzzled by the elements of botany, candidates for the doctorate struggling with their dissertations, distinguished explorers planning expeditions, government experts from Washington, authors finishing textbooks, artists drawing botanical plates, research workers in the midst of the most baffling problems. All of them turned to her for aid when it came to the literature of their subject. She was friendly with all, interested in their work, sympathetic with their difficulties. She seemed to remember everybody.

She had a wide correspondence, that is to say she constantly received letters from former students and assistants of the Herbarium who had become established elsewhere, and she answered them as best she could. They always remembered her, remained her friends, and turned to her for assistance. They asked all imaginable questions and made the most varied requests—for transcriptions of technical matter, for citations, titles, dates of editions, advice regarding book-purchases, counsel in domestic difficulties, and one of them, settled in a far western state, asked her to send him a wife.

Miss Day became one of the oldest of Harvard's great band of specialized workers. Up to her seventieth year she changed little, retaining remarkably her energy and vigor, and to the rapidly passing four-year generations of students seemed almost as much a fixture in the University as Appleton Chapel or Memorial Hall. She rarely lost a day by illness, habitually worked after the closing hour, and voluntarily assumed many small duties in addition to her regular work. She would have made equally good in many other occupations. It was by chance that she entered botany—a chance truly fortunate for the science since her contribution to its development was individual in character, notable in extent, and of an enduring nature.

AN EPILOBIUM UNDER ESTUARINE CONDITIONS.

Norman C. Fassett.

The distinguishing characteristic of the tribe *Epilobiae* of the *Onagraceae* is the tuft of hair, or coma, on the seeds, but the writer finds in a collection made during the summer of 1923 by Mr. H. K. Svenson and himself a plant which exactly matches *Epilobium glandulosum* Lehm., var. *adenocaulon* (Haussk.) Fernald[1] in every character except that the seeds have no suggestion of a coma. This plant was collected on the tidal flats of the St. Lawrence River at St. Vallier, some twenty miles below the city of Quebec, and examination of the specimens in the Gray Herbarium shows that the same form was collected a year earlier by Professors M. L. Fernald and A. S. Pease at Berthier, ten miles below St. Vallier.

According to Hildebrand,[2] who investigated *E. hirsutum*, the coma is formed while the flower is still in bud, long before fertilization has taken place. But in this form from the shores of the St. Lawrence there is no trace of a coma at any stage, either before or after the bud has opened, so we may not consider that the coma is lost, but that it does not develop at all, and that this is perhaps a reversion to an earlier type.

Ordinary plants of wet habitats take on strange forms and often undergo reversions when they become well established upon estuaries, as, for example, *Leersia oryzoides* (L.) Sw., forma *glabra* A. A. Eaton,[3] of the tidal flats of the Merrimac and Kennebec Rivers, which has not only lost its scabrosity, but has become cleistogamous, and *Sium suave* Walt., forma *fasciculatum* Fassett,[4] of the Kennebec River estuary, which is prostrate, rooting at the nodes, with fascicles of simple leaves which are of the same form as those of the seedlings of the normal plant. It is possible that the plant under discussion has adapted itself to estuary conditions, where the seeds may be carried off by the rising water; that is, a normally wind-disseminated plant has become water-disseminated.

Epilobium glandulosum Lehm., var. **ecomosum**, var. nova, varietatem *adenocaulon* simulans, sed seminibus comam carentibus.

[1] Rhodora, xx. 35 (1918).
[2] Bot. Zeit. xxx. 235 (1872).
[3] Rhodora, v. 118 (1903).
[4] Rhodora, xxiii. 111 (1921).

Like variety *adenocaulon*, but with the seeds destitute of coma. PROVINCE OF QUEBEC: shaly beach of the River St. Lawrence, Berthier, Montmagny Co., July 14, 1922, *Fernald & Pease*, no. 25196; rocky tidal shore of the St. Lawrence, St. Vallier, Aug. 9, 1923, *Svenson & Fassett*, no. 874 (TYPE in Gray Herb.).

GRADUATE SCHOOL OF ARTS AND SCIENCES, HARVARD UNIVERSITY.

ANOTHER DAVENPORT FERN HERBARIUM.

C. A. WEATHERBY.

PROBABLY most fern students in America know that the Davenport Fern Herbarium is the property of the Massachusetts Horticultural Society and is kept in their building in Boston. It consists of specimens of the ferns known, at the time when it was formed, to occur in North America north of Mexico, carefully selected, where selection was possible, to show the characteristics and range of variation of each species, with a few extra-limital specimens for comparison. Its extent is still indicated with a fair degree of accuracy by the Catalogue of 1879 and the supplement thereto of 1883, though after the latter date Davenport added occasional sheets of newly discovered species or of old ones whose representation he thought inadequate. It contains the types of the following species and varieties:—*Aspidium simulatum*, *Cheilanthes fibrillosa*, *C. Parishii*, *C. Pringlei*, *C. villosa*, *C. viscida*, *Cystopteris fragilis*, var. *laciniata*, *Notholaena Grayi*, *N. Schaffneri*, var. *mexicana*, and *Pellaea Wrightiana*, var. *compacta*. Critical notes by Davenport himself and letters from Asa Gray, J. G. Baker, and D. C. Eaton are now and then pasted into the folders which contain the specimens. Altogether, the collection is of more than ordinary interest.

But Davenport's herbarium-making was not confined within the limits set for this collection. Almost up to the time of his death in 1907, he continued to acquire specimens from many parts of the world. The resultant collection remained in the possession of his family until December, 1922, when it was given to the Gray Herbarium by his daughter, Miss Mary Elizabeth Davenport. As there received, it numbered about 4500 sheets, of which perhaps 150 were flowering plants, mosses, and algae, the remainder ferns. Nearly all of them were unmounted, and they had apparently never been fully organized.

Any collection of such size, belonging to a botanist of Davenport's reputation, will contain some rejicienda in the form, for example, of scraps sent in for identification by thoughtless correspondents. And any unmounted collection, no matter if, as in this case, it is preserved with pious care, is liable to mishaps such as the loss of labels. Davenport's has not escaped; there are in it a considerable number of specimens totally without data. But, after all deductions from such causes have been made, there remains a mass of material of very real value and sometimes of unexpected interest—as when there turned up a frond from one of the isotypes of *Aspidium mohrioides* Bory, described from the Falkland Islands in 1828, or when there were found some half dozen ample collections of European *Botrychium matricariaefolium*, previously represented at Cambridge by two meager specimens. This residue—and it is large—forms a very welcome addition to the Gray Herbarium; some further account of what it contains may be of interest.

First and foremost come the types of all the species and varieties described by Davenport except those listed above as at the Horticultural Society. Of all these latter there are isotypes, if some fragments of *Cheilanthes fibrillosa*[1] and a single pinna of *C. Parishii* may be so regarded. In several cases, the types are accompanied by larger or smaller amounts of duplicate material. It may be doubted if there is anywhere else so large and fine a set of *Asplenium Pringlei* as Davenport possessed.

Davenport did not collect extensively himself. His own specimens are mostly of ferns from localities readily accessible from his home in Medford, or taken from his garden. They are commonly chosen to illustrate variation, or they form large duplicate series of species or forms in which he was especially interested—the Botrychia, *Thelypteris cristata* × *marginalis*, *T. simulata*, and crested forms of the marsh fern and the pasture fern. With these, and with sets received from Pringle and Mrs. E. H. Terry in Vermont, William Stout in

[1] In view of the fact that this species is still known only from the scanty type collection, it may be of interest to record that there is another isotype in the herbarium of Brown University. *C. fibrillosa* was detected by Davenport (according to a letter of his to D. C. Eaton, Feb. 4, 1885) among a set of specimens of *Cheilanthes* collected by Parish for William Stout. They arrived after Stout's death and were sent by his sister, Miss Anna E. Stout, to Davenport for examination. He kept a comparatively small portion of the material of *C. fibrillosa* for himself, returning the rest to Miss Stout. Later she gave her brother's herbarium to Brown. The specimen of *C. fibrillosa* there is probably the best in existence.

New York and other correspondents, the ferns of the northeastern United States are adequately, but, except in the special cases mentioned, by no means copiously, represented.

As to other regions, the scope of the herbarium may be indicated by the following list of the larger and better known collections from which it has material.

NEWFOUNDLAND: Robinson & Schrenk.
EASTERN CANADA: Fernald & Collins, Gaspé.
SOUTHEASTERN UNITED STATES: Donnell Smith, various states; A. H. Curtiss and Mary C. Reynolds, Florida; W. C. Dukes, Alabama—an interesting series of the ternate *Botrychia* of that region.
TEXAS: E. Palmer; Reverchon.
SOUTHWESTERN UNITED STATES: Pringle, Lemmon, E. Palmer, and numerous correspondents in California—so many that the species of that region are often better represented than those of the Northeast.
NORTHWESTERN AMERICA: Suksdorf's earlier collections; Howell, Oregon and Alaska; L. M. Turner, Alaska.
MEXICO: An apparently almost complete set of the ferns of Pringle's earlier collections (sent in for naming), including several numbers not before represented at the Gray Herbarium; sets of E. Palmer, Conzatti & González, C. L. Smith and Millspaugh (Yucatan); a few specimens each from Rovirosa and Fink.
WEST INDIES: Full sets of the ferns of Millspaugh's Plantae Utowanae and Plantae Antillanae; J. R. Churchill, Jamaica; Hahn, Martinique, some of whose specimens are from localities on the slopes of Mont Pelée doubtless blown into dust or buried under lava in the great eruption.
SOUTH AMERICA: Fendler, Venezuela—a good set; Leprieur, French Guiana.
EUROPE: R. A. Ware; H. Christ—a set containing series of named varieties and forms of various species.
REGION OF THE PACIFIC: Vieillard, different islands; William Wendte, Hawaiian Islands; Ferrie, Loo Choo (a few only); Verreaux, Australia; Eric Craig, New Zealand.[1]

Interest of another sort is added to the collection by Davenport's habit of keeping with his specimens letters relating more or less to them. There are perhaps a hundred of these letters from persons of all degrees of obscurity and prominence. Among them are—to mention a few—J. G. Baker, H. Christ, Raynal Dodge, A. A. and D. C. Eaton, Engelmann, Thomas Howell, Leggett, Pringle, Redfield, and John Robinson. A large proportion of the letters are of interest chiefly as autographs; some, however, cast side-lights on the biography, the character, or the opinions of their writers, or record incidents not unworthy of note.

[1] Craig used to prepare dried bouquets of ferns and mosses which he sold to those who fancied such things and, so far as he is known to botanists, may be infamous accordingly. But he also issued sets of real botanical specimens, for the most part accurately named, some of which came into the hands of American amateurs but seem only now to be making their way into public herbaria. Their defect is lack of detailed data; "New Zealand" is the only information vouchsafed.

Pringle writes from Vermont, Dec. 15, 1901: "The thought of going out alone again was appalling at first; but I am making up my mind to face the dreariness and peril. Pity my lonely life." It is good to learn that, the plunge once made, things were not always so bad. "I trust," he writes from Monterey in 1906, "that you can be grateful, as I am, for every remaining day of life in this beautiful world . . . I have waited . . . sixteen years . . . to return to this Monterey region; and now I am rewarded by finding here the most magnificent flora I ever met with. Never a garden so gay with flowers, no field with so multitudinous species." It appears, if any evidence were needed, that botanists of a generation ago sometimes took nomenclatorial argument very seriously; and that they did not always admire one another. "———— seems determined to keep his *stupidity* before the scientific world . . . I have advised the editor of his incapacity and conceit." It appears, too, that they had their foibles. One collector, sending in two insignificant fragments, one sterile, for determination, wrote:—"*I alone* am entitled to whatever credit there may be in getting these ferns . . . If we discover a new Notholaena, I hope you will associate my name with it." Davenport submitted this letter and the specimens to John Robinson, and that downright gentleman replied, in phrases which seem the more emphatic in his bold handwriting:—"The man who sent these specimens to have named would send a finger nail to an anatomist to get the name of the man or woman who pared it off. The man who would send such immature and fragmentary specimens to have new names has impudence worthy of the man who, having had a pair of boots given to him, asked the donor to black them for him. Give him fits!"

As to incident, here is a pleasantly characteristic letter from D. C. Eaton, accompanying a specimen of *Cheilanthes lanosa* from New Haven.

Dec. 17, 1892

My dear Mr. Davenport:—

Have a fern new to New England! and gathered within three miles of my house. Mr. Van Ingen climbed a trap rock cliff till he could get neither up nor down, found this fern, and waited till men let down a rope from the top and hauled him up. I do not think I shall try it—though I did climb clear to the top 42 years ago.

Yours very truly,
Daniel C. Eaton.

Perhaps the most interesting of all, as they certainly are the most surprising, are a series of letters from William Stout. Stout was an

amateur of New York who gathered a considerable herbarium of ferns and evidently came to know them well and to take a highly intelligent interest in the problems of their classification. In particular he was attracted to the group of scaly Cheilanthes of the southwestern United States, the taxonomic difficulties of which have recently been so happily cleared up by Dr. Maxon.[1] In the fall of 1879 he visited New Haven where he spent several days in examining Eaton's material[2] and devised a scheme of classification which, as the admirably clear statements in his letters show, agreed not only essentially, but in many details, with that worked out long afterward and quite independently by Maxon. He separated the same species (except *C. villosa* which he evidently had not seen) and by the same characters of rootstock and scales.

Stout submitted his conclusions to Eaton, apparently with permission to use them as he liked in the "Ferns of North America," then still in process of publication, and to Davenport. Eaton, as one of his letters shows, was at first sufficiently impressed not only to give a manuscript name to one of Stout's species,[3] the Californian plant now to be known as *C. Covillei* Maxon, but actually to send a description of it to the Torrey Bulletin for publication. Before it could be printed, however, he changed his mind and withdrew it, remarking to Davenport, "Mr. Stout may publish the species, *which is really his own*, if he wishes." Davenport, after some vacillation, proved rather more receptive. In Feb., 1880, he even wrote a long letter to Eaton urging the recognition of the Californian plant as a species. But before this letter was copied, the receipt of new specimens which broke down a character he thought he had discovered caused him also to change his mind, and the letter was never sent. He was still disposed to recognize Stout's segregates as varieties of *C. Fendleri*, a disposition of them which by no means satisfied Stout. Finally the matter was referred to J. G. Baker at Kew; he replied that all

[1] Proc. Biol. Soc. Washington xxxi. 139–152 (Nov. 29, 1918).

[2] "Professor Eaton," he writes to Davenport, "received me with the utmost kindness and courtesy, much better than I knew how to treat him, and I could not help feeling myself at a disadvantage in that regard. I feel very uncomfortable in being so much in the attitude of questioning his judgment and can but deprecate my too direct manner of expressing my opinion when my mind is clear. My comfort is that the facts have seemed to support me." The passage speaks clearly of the quality of both men.

[3] See Maxon, op. cit. 148.

the plants concerned were only forms of a single species, *C. myriophylla*. Eaton ultimately adopted the same view.

But Stout proved worthy of his name. Having convinced himself that he was right, he refused to yield to any array of authority, however distinguished. "I am a very wicked man" he wrote to Davenport, "and do not care a fig for labels when the plants confute them, even though they come from Kew. You must know that I recd a serious shock when I found there was no botanical Pope &, in consequence, have become a monstrous botanical skeptic . . . I think I am right in listening to the plants *first* & with confidence, to authorities next & always more or less doubtingly." He maintained his position vigorously through a long epistolary argument with Davenport, which he closed at last, in June, 1880, with a bit of half-serious extravagance and a wholly serious resolve. "Throwing our scaly Cheilanthes into *myriophylla* seems to me very like throwing scientific botany to the four winds. Apply a similar scale of reduction to the 3000 ferns and what would be left? A few groups, divisions and subdivisions of genera. Specific lines would be practically abandoned. What is the use, then, of vexing ourselves about nice points of specific distinction? Let us call all the plants *greens* & make a salad of them. 'Better is a dinner of herbs' than scientific botany gone daft . . . Still I am ready to study these Cheilanthes all over again when I can get sufficient fresh material . . . I cannot differ as I do from all authorities without being much concerned lest it is I who have gone daft."

Between June, 1880, and March, 1883, before this re-examination could be undertaken, Stout died. In the latter year Davenport began an article expounding his own views; the half-finished manuscript is among his papers. With it have lain, unknown to everyone, the letters of Stout which set forth his treatment. That it was not he who was "daft" has remained for Dr. Mason to prove.

There is nothing to indicate that Stout had had previous experience in taxonomic work. He saw only scanty material—two sheets of *Cheilanthes Wootoni* and so little of *C. intertexta* that he was not sure of its status, though he thought it distinct. It is extraordinary that under such circumstances he should have struck out on a line of his own, at variance with the prevailing taxonomic ideas of his day, and should have produced a revision of a difficult (though small) group so good that after forty years and the accumulation of much

more material, an expert specialist in ferns could do no better. An excellent pteridologist was wasted in William Stout.[1]

GRAY HERBARIUM

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLIV.

COMPOSITAE.

ASTER.

A. acuminatus Michx. Low woods; frequent, but no reports south of Norwell, Rockland and Norwood.

A. amethystinus Nutt. Moist ground, rare; Beverly, Cambridge, Arlington, Belmont, Brighton; Westford, according to Dame & Collins, Fl. Middlesex Co. 48, 1888.

A. COMMUTATUS (T. & G.) Gray. Railway, Lowell Junction [Wilmington] (*J. R. Churchill*, Sept. 27, 1884). Specimen in herb. J. R. Churchill. A western waif.

A. cordifolius L. Low ground, common throughout.

A. cordifolius L., var. **polycephalus** Porter. Open woods, common, Danvers (*J. H. Sears*, Sept. 20, 1884); Medford (*Mrs. P. D. Richards*, no date); Winchester (*F. W. Grigg*, Sept. 23, 1911); Cambridge (*F. W. Grigg*, Sept. 28, 1921).

A. divaricatus L. Dry woods, very common throughout.

A. dumosus L. Dry fields and pastures, very common throughout.

A. dumosus L., var. **coridifolius** (Michx.) T. & G. Dry pasture, Hingham (*C. H. Knowlton*, Sept. 9, 1916); Dover (*F. W. Hunnewell*, Sept. 18, 1915); Ipswich (*Wm. Oakes*, no date); Tewksbury (no date).

A. dumosus L., var. **strictior** T. & G. Damp border of South Reservoir, Medford (*W. P. Rich*, July 23, 1894); dry field, Chelmsford (*C. H. Knowlton*, Sept. 7, 1914); Stony Brook Reservation (*N. T. Kidder*, Aug. 16, 1919); dry pasture, Hingham (*C. H. Knowlton*, Sept. 9, 1916); dry fields, Sharon (*J. A. Cushman*, Aug. 23, 1909).

[1] The few facts here given are all that I have been able to find out about Mr. Stout. If any reader chances to possess further information it will be welcomed by me.

I am indebted to Dr. George F. Eaton and to Prof. J. F. Collins for the loan of letters and other assistance in collecting information on some of the matters here touched upon.

A. ericoides L. Dry sandy soil; common in southern towns, becoming less common northward, with hardly any reports from Essex County.

A. ericoides L., var. **villosus** T. & G. Dry soil, Bedford (*C. W. Jenks & M. L. Fernald*, Sept. 10, 1899); dry open ground, Stoneham (*F. W. Grigg*, Nov. 5, 1911); dry field, Hingham (*C. H. Knowlton*, Sept. 18, 1910); dry field, Halifax (*C. H. Knowlton & W. P. Rich*, Sept. 23, 1906).

A. Herveyi Gray. Borders of dry oak woods, rare; Brookline, W. Roxbury, Hyde Park, Milton. First discovered in 1866 at New Bedford by E. W. Hervey.

A. infirmus Michx. Dry open woods, rare; Lincoln, Lexington, Concord, Carlisle; Acton (*C. W. Swan*) according to Dame & Collins, Fl. Middlesex Co. 48, 1888.

A. laevis L. Dry sandy soil; very common except in southeastern towns below Weymouth and Hingham. Broad-leaved form (var. **amplifolius** Porter) reported from Essex County and W. Roxbury.

A. lateriflorus (L.) Britton. Open ground, wet or dry, very common and variable.

A. lateriflorus (L.) Britton, var. **hirsuticaulis** (Lindh.) Porter. Mt. Hope Station, W. Roxbury (*E. Faxon*, Oct. 2, 1889). Specimen in herb. W. Deane.

A. linariifolius L. Dry sandy and gravelly soil, very common throughout. White-flowered form rare.

A. longifolius Lam. Moist soil, rare; Georgetown, Medford, Lexington, Brighton, W. Roxbury, Stony Brook Reservation, Blue Hill Reservation.

A. macrophyllus L. Woods and low ground; common in general, but not reported from southeastern towns below Hingham.

A. macrophyllus L., var. **ianthinus** (Burgess) Fernald. In similar places, occasional; Ipswich, Cambridge, Dorchester, Milton, Sherborn, Hopkinton.

A. multiflorus Ait. Dry fields and roadsides, very common throughout.

A. multiflorus Ait., var. **exiguus** Fernald. On rocks at edge of sea, Pride's Crossing, Beverly (*Miss Anna L. Jackson*, Oct. 2, 1894); Dedham (*C. E. Faxon*, no date); dry soil, Hingham (*C. H. Knowlton*, Oct. 8, 1916).

A. nemoralis Ait. Wet sphagnum bogs, rare; Georgetown, Boxford, Andover, Tewksbury, Lynn, Melrose, Milton (plants from Milton not quite typical); Dracut (*C. W. Swan*) according to Dame & Collins, Fl. Middlesex Co. 48, 1888.

A. nemoralis Ait., var. **Blakei** Porter. Wet woods and swamps, rare; Hamilton (*F. W. Hunnewell*, Oct. 1, 1916); Chelmsford (*C. H. Knowlton*, Sept. 20, 1902); Bedford (*C. W. Jenks*, Aug. 26, 1889 et seq.).

A. novae-angliae L. Moist fields and meadows, frequent and often abundant, but not reported south of Scituate, Hingham and Canton. White form reported from Woburn, according to M. P. Cook, Rhodora i. 82, 1899.

A. novae-angliae L., forma **roseus** (Desf.) Britton, Proc. Nat. Sci. Assn. Staten Isl., Nov. 8, 1890. Andover, Salem, Cambridge, Boston, Acton, Hingham, Scituate.

A. novi-belgii L. Swamps and wet places, very common throughout.

A. novi-belgii L., var. **atlanticus** Burgess. "Chelsea Beach," Revere (*C. E. Faxon*, no date). Specimen in herb. Gray. See Britton & Brown's Illustrated Flora iii. 370–371, 1898, ed. 1.

A. novi-belgii L., var. **Brittonii** Burgess. Salt marsh, "Chelsea Beach," Revere, collector and date unknown; railway track, Longwood [Brookline] (Sept. 30, 1877, collector unknown.) Specimens in herb. Gray. See Britton & Brown's Illustrated Flora, iii. 370–371, 1898, ed. 1.

A. novi-belgii L., var. **laevigatus** (Lam.) Gray. Wet places; Middlesex Fells, Cambridge, Chelsea, Sherborn, Sharon. A large-flowered variety, with thin leaves, and loose, nearly equal bracts in the involucre. Seldom collected, and not well known.

A. novi-belgii L., var. **litoreus** Gray. Salt marshes and rocky seashores, common.

A. novi-belgii L., forma **roseus** Rand & Redfield. See Rand & Redfield, Fl. Mt. Desert, Maine, 115, 1894. A single fair-sized clump growing a little above the level of the salt marsh, Salisbury (*R. S. Mulliken*, Sept. 29, 1920). Specimen in herb. Gray.

A. paniculatus Lam. Swamps and moist places, irregularly distributed throughout.

A. paniculatus Lam., var. **acutidens** Burgess. Stony Brook near

Boylston station, Jamaica Plain (*E. Faxon*, Oct. 9, 1883; Sept. 15, 1889). Specimens in herb. W. Deane.

A. paniculatus Lam., var. **simplex** (Willd.) Burgess. Roadside near Punkatasset Hill, Concord (*E. Faxon*, Oct. 3, 1890). Specimen in herb. W. Deane.

A. patens Ait. Dry fields and woods, common throughout.

A. polyphyllus Willd. Dry soil, rare; "Essex Co.," Medford, Hingham.

A. puniceus L. Swamps and wet woods, common throughout.

A. puniceus L., var. **compactus** Fernald. Low ground, occasional (12 stations).

A. puniceus L., var. **demissus** Lindl. Marsh, W. Somerville (*M. L. Fernald*, Oct. 17, 1896). Specimen in herb. N. E. Botanical Club.

A. puniceus L., var. **firmus** (Nees) T. & G. Jamaica Plain [W. Roxbury] (*E. Faxon*, October, 1883).

A. radula Ait. Borders of woods and swamps; frequent northward, but no reports from southeastern towns.

A. salicifolius Ait. Moist soil, rare; Lowell, Lexington, Revere, Hingham; Malden (*H. L. Moody*) according to Dame & Collins, Fl. Middlesex Co. 47, 1888. A doubtful species in our area.

A. spectabilis Ait. Dry sandy soil; frequent from Brookline and Needham south and east; also at Boxford.

A. subulatus Michx. Salt marshes, common along the coast.

A. tardiflorus L. Woburn (*Wm. Boott*, 1849). Specimen in herb. Gray.

A. tenuifolius L. Salt marshes; Ipswich, Medford, Dorchester, Weymouth, Hingham, Duxbury.

A. Tradescanti L. Collected without data as to habitat at Danvers, Medford, Needham, and Jamaica Plain. A doubtful species in our area.

A. umbellatus Mill. Swamps and thickets, common throughout.

A. undulatus L. Dry fields and woods, very common throughout.

A. vimineus Lam. Moist fields and meadows, very common throughout.

A. vimineus Lam., var. **foliolosus** (Ait.) Gray. Andover, Malden, Lynn, Marshfield.

A. vimineus Lam., var. **saxatilis** Fernald. Lowell (*C. W. Swan*, July 20, 1882); bank of Merrimac River opposite Lawrence (*J.*

Robinson, Aug. 5, 1879); shore of Winter Pond, Winchester (*K. M. Wiegand*, Sept. 28, 1908).

A. undulatus L. × **novi-belgii** L. See M. L. Fernald, RHODORA iv. 186–187, 1902. Damp sandy thicket, Carlisle (*Miss E. L. Shaw*, October 1900 and 1901).

Other hybrids have been reported for this genus in our area, but none of them has been published. As some of the species show a great natural variability, and the question of the origin of the reported forms is at best a very difficult one to settle, it has seemed best to omit the reported hybrids from this paper.

BACCHARIS.

B. HALIMIFOLIA L. Escaped from cultivation in Cambridge, in Brighton, in the Fenway district of Boston, and perhaps elsewhere.

BAERIA.

B. GRACILIS Gray, var. TENERRIMA Gray. N. Chelmsford (*W. P. Alcott*, June 4, 1879). Specimen in herb. Peabody Acad. Sci. Adventive from California.

B. ULIGINOSA Gray. N. Chelmsford (*W. P. Alcott*, June 10, 1879). Specimen in herb. Peabody Acad. Sci. Adventive from California.

BELLIS.

B. PERENNIS L. Escaped from cultivation at Oak Grove, Malden (*F. S. Collins*, May 31, 1886). Specimen in herb. N. E. Botanical Club.

BIDENS.

B. ARISTOSA (Michx.) Britton. Dump, Lowell (*C. W. Swan*, Sept. 9, 1884); rubbish heap, Botanic Garden, Cambridge (*M. L. Fernald*, 1890).

B. ARISTOSA (Michx.) Britton, var. FRITCHEYI Fernald. See RHODORA xv. 74–78, 1913. Made land, S. Boston (*C. E. Faxon*, August, 1878). Specimen in herb. Gray.

B. ARISTOSA (Michx.) Britton, var. MUTICA (Gray) Gattinger. See RHODORA l. c. Soldiers Field, Brighton (*A. S. Pease*, Oct. 6, 1903); Sharon (*S. F. Poole*, September, 1905).

[*B. Beckii* Torr. is recorded under *Megalodonta*.]

B. BIPINNATA L. A rare weed at Lowell, Malden, Boston and Dedham.

B. cernua L. Swamps and wet places; not reported southeast of Blue Hills and Hingham, but frequent elsewhere.

B. cernua L., var. **elliptica** Wiegand. See Torr. Bull. xxvi. 417–418, 1899; Rhodora xxiv. 206–207, 1922. Occasional north of Boston, also at Sharon.

B. cernua L., var. **oligodonta** Fernald & St. John. See Rhodora xvii. 25, 1915. Fleshy form near salt water, Watertown (*F. S. Collins*, Aug. 24, 1886). Specimen in herb. N. E. Botanical Club.

B. comosa (Gray) Wiegand. Rich moist soil, rare (eight stations).

B. connata Muhl. Moist soil, common.

B. connata Muhl., var. **fultior** Fernald & St. John. See Rhodora xvii. 24, 1915. Shore of Lake Massapoag, Sharon (*E. F. Williams*, Sept. 10, 1899). Specimen in herb. Gray.

B. connata Muhl., var. **petiolata** (Nutt.) Farwell. See Rhodora x. 197–200, 1908. Occasional from Salisbury to Duxbury along the coast, inland to Concord and Needham.

B. coronata (L.) Britton. (Includes *B. trichosperma* (Michx.) Britton and var. *tenuiloba* (Gray) Britton. Bot. Gaz. 56, 495, 1913). Swamps. Common and very abundant in Essex County, also along the Neponset and its tributary brooks in Norfolk County, and at Easton and Raynham in Bristol County; occasional in Middlesex County.

C. H. Knowlton } *Committee on*
Walter Deane } *Local Flora.*

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NOTES ON NORTH AMERICAN SCUTELLARIAS.

C. William Penland.

(Plates 140, 141.)

Dr. Asa Gray (Proc. Am. Acad. viii. 370), after remarking as to the placing of the genus *Scutellaria* in a subtribe, goes on to state that "The winged nutlets of *Perilomia*, however, are curiously imitated in one or two species of *Scutellaria*, only obscurely so in *S. parvula*, as has been noted by Dr. Torrey, . . . but strikingly in *S. nervosa*, Pursh, and in a Japanese species not otherwise very similar . . . ." The presence of this membranaceous wing, together with a reputed difference in shape of the corolla, is used as a basis of separation of the above-mentioned genus *Perilomia* from *Scutellaria* by Humboldt, Bonpland & Kunth (Nov. Gen. & Sp. Amer. ii. 326). Prof. Fernald (Rhodora, xxiii. 85), after examining sheets of the Old World *S. galericulata* and of the North American form, which for many years had passed as *S. galericulata*, came to the conclusion that the Old World plant is really not found as such on this side of the Atlantic, but that it has a closely related representative here. This was demonstrated chiefly by nutlet-characters, the exact significance of which will be clarified in the sequel.

These facts have combined to indicate that perhaps a critical inspection of the group in question, from the standpoint of the fruit, might serve to throw light on, if not to clear up, some well known taxonomic difficulties existing here. From an examination of over

two thousand sheets of herbarium material, it was found that the nutlet-characters indicated in a striking way the relationships of species and sections within the genus.

At this point it will be convenient to establish the generic and tribal relations of *Scutellaria*. In 1832–36, Bentham (*Labiatarum Genera et Species*) put *Scutellaria* and *Perilomia*—a South American genus—into a single tribe, but later, in 1848 (De Candolle's *Prodromus*), he added *Brunella* and *Cleonia* to these two and threw them into a sub-tribe *Scutellarieae* of the tribe *Stachydeae*. Briquet, in his treatment of the genus in Engler & Prantl's *Die Natürlichen Pflanzenfamilien*, assigns *Scutellaria* and *Salazaria* Torrey to the tribe *Scutellarioideae*, placing *Perilomia* in a separate tribe, *Stachyoideae*. It is noteworthy that in his grouping of the *Perilomia* entities he includes certain forms which other authors have put with *Scutellaria*, e. g., *S. Mociniana* Benth., and which apparently do not differ from that genus except by the alleged upright position of the seed. This special portion of the genus even has the scutellum on the calyx,—a character lacking in other sections. Undoubtedly the position of the seed is important in the classification, but its infallibility is questionable when it separates such apparently closely related forms. It is to be regretted that more material of these forms is not at hand. It is thought that the presence of the scutellum might serve as a more reliable generic character.

Scutellaria then, is characterized by its bilabiate calyx, with lips entire and closed in fruit. From the upper lip is a projection known as the scutellum. Its co-genus *Salazaria* is set off on account of its calyx which becomes swollen in fruit.

As somewhat detailed accounts of the genus, we have the earlier work of Arthur Hamilton, "Monographie du Genre Scutellaire," Bulletin Seringe, 1832, and Bentham's treatise in the work above mentioned. Both these earlier writers have seen fit to make a number of sections, separated according to the nature of the inflorescence, Bentham confessing on his part the inadequacy of these characters. Hamilton makes but three sections and includes in them fifty-two species, fourteen of which are assigned to North America. Bentham makes five sections into which sixty-three species are placed, fifteen of which are North American. Inasmuch as in the present investigation the fruit has been specially studied, and since the Old World specimens available were too infrequently fruiting for accurate observation and too scarce for authoritative judgment, it was thought

best to confine attention to North American material, exclusive of Mexico.

Interestingly enough, the sections earlier adopted in classification are, with a few exceptions, confirmed by the reproductive characters. Briquet, following the work of Gray, was evidently the first to expand on the more conservative, and therefore more reliable reproductive characters, to indicate taxonomically the natural relationships. The presence or absence of a membranaceous wing does not establish

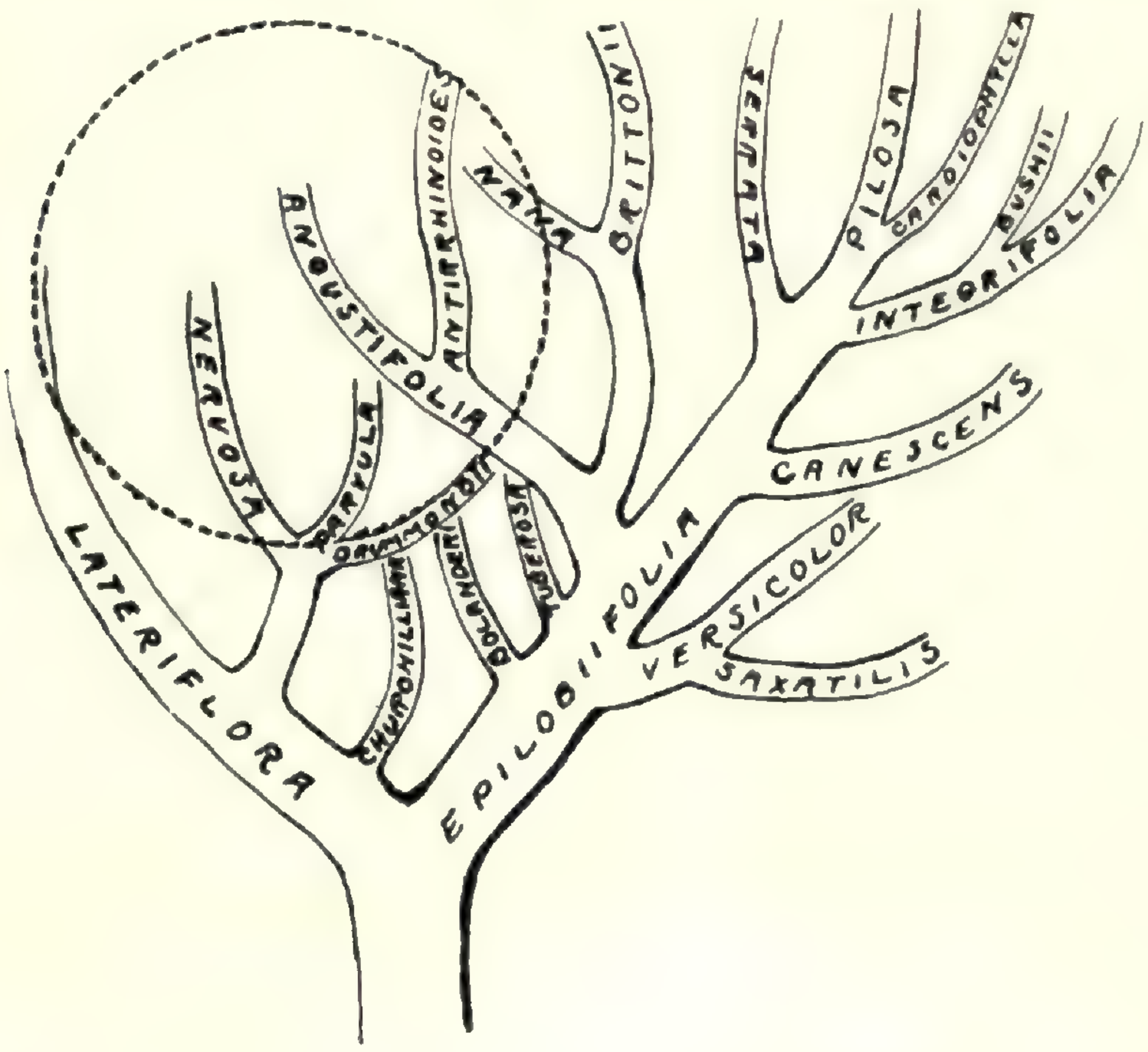


Diagram 1. Showing relation of species of Scutellaria. (Forms with winged nutlets are in the circle.)

generic differences, as indicated by Bentham, for at least three well defined American species of the genus have this wing. It is also well to remark here that the two sheets referred to *Perilomia* (*P. ocymoides*) which are found in the Gray Herbarium do not have the winged achenia attributed to the genus. Apparently, therefore, we have double evidence as justification for the discard of this character as a generic distinction. However, the membranaceous wing is important within the genus *Scutellaria* and might afford a basis for the first division into component parts in an artificial key.

It is believed that even this nutlet-character is artificial, since it apparently has been secondarily acquired, appearing as it does in several different groups. It seems beyond a doubt, that *Scutellaria*

lateriflora and *S. epilobiifolia* are nearest the ancestral branch of the phylogenetic tree (diagram 1). Both are very wide-spread in distribution. According to the diagram, as I have conceived the situation, they represent the first forks of the tree, and both have given rise to groups showing the character in question. Further, in a hasty review of nutlet-characters of the other genera of the *Labiatae*, it appears that the character referred to is absent. This is another justification for believing it is of more recent development.

The first division was taken up by Gray, later adopted by Briquet and is now in use by authors of the larger manuals in this country. Briquet introduced names for these divisions or sections. The section *Scutellariopsis* should be extended to include at least two more North American species. Hitherto *Scutellaria nervosa* has been classed as our sole representative of this group. Yet it is difficult to understand why *S. parvula*, the achene of which has a conspicuous band, amazing in its constancy, should be left out. Here too we should place the *S. angustifolia* group, one species of which has nutlets with wings rivaling even those of *S. nervosa*.

The present status of the work and the limited area covered do not justify the grouping of the species of the genus into sections. It is hoped that later a survey of the world representatives may be made, at which time such sectional characters may be properly adjudged. It is hoped also, that a study of the immediately related genera may be taken up, following the more critical reproductive characters.

The arrangement of species given below follows a more or less natural system. As arranged, numbers 1, 2 and 3; 4 and 5; 6, 7, 8, 9, 10 and 11; 12, 13, and 14; and 15, 16, 17, 18, 19, 20 and 21, form fairly well defined groups. It will be seen that they do not agree with treatments given by other students of the group. The fact that militates against this kind of grouping, of course, is that it indicates an impossible linear evolution. True relationships are better shown in the tree (diagram 1).

There remains to say a word or two upon the acceptance of nutlet-characters as a basis for the separation of sections. This can best be brought out by means of an example: Perhaps one of the best-marked groups of species, the interrelations of which are shown by nutlet-characters, is the series consisting of *S. lateriflora*, *S. galericulata* and *S. epilobiifolia*. All three have canary-yellow achenes which are not duplicated elsewhere in the genus. Of these three *S. galericulata* (I am using this Old World species for purposes of illustra-

tion) comes between the others, both from a superficial standpoint and from the characters of the nutlets. *S. lateriflora* has small papillae or wart-like protuberances on the surface of the achene, while *S. epilobiifolia* has the surface of the achene merely scabridulous. The European *S. galericulata* has nutlets closely resembling those of *S. lateriflora*, while the vegetative characters are very similar to those of *S. epilobiifolia*. The corolla of the latter exceeds by about 1 cm. that of *S. galericulata*, which attains a length of no more than 1.5 cm. From this comparative examination, based on reproductive characters, it would seem anything but following the natural system to break off *S. lateriflora* and put it into a separate section as both Bentham and Briquet have done.

I desire to record my thanks to Prof. M. L. Fernald, who has supervised this work and given invaluable advice; to Dr. B. L. Robinson, Dr. J. M. Greenman, and Mr. Bayard Long, for the loan of herbarium material of their respective institutions; to Miss Mary A. Day and other members of the Gray Herbarium staff for help rendered along various lines during the execution of the work.

The key, based upon nutlet-characters, is artificial, since, as already explained, species which seem to have come through different lines of descent are thrown together. In the citation of specimens all which are not in the Gray Herbarium are indicated by initials in parentheses: N, Herbarium of New England Botanical Club; M, Missouri Botanical Garden; P, Academy of Natural Sciences of Philadelphia.

Analytic Key based on Nutlet-Characters.[1]

A. Nutlets banded or winged, or conspicuously compressed dorso-ventrally B.
  B. Nutlets conspicuously winged C.
    C. Nutlets not over 1 mm. in diameter; wing more or less median D.
      D. Nutlets with muriculate papillae; wing relatively wide 7. *S. nervosa.*
      D. Nutlets with bluntish papillae; wing relatively narrow 6. *S. parvula.*
    C. Nutlets mostly over 1 mm. in diameter; wing somewhat basal, giving the nutlet a flattened appearance E.
      E. Nutlets with relatively narrow, unexpanded and non-membranaceous wings.....8. *S. angustifolia.*
      E. Nutlets with very wide, membranaceous wings. 9. *S. antirrhinoides.*
  B. Nutlets mostly merely compressed, never with conspicuous wings I.
    I. Nutlets dull yellow or grayish, with somewhat conical papillae.....11. *S. nana.*

[1] In the absence of mature nutlets some species have to be omitted from this key. Though in the succeeding descriptions they are placed in what appears to be their natural sequence.

I. Nutlets dull black, with somewhat tuberculate, flattish papillae.....10. *S. Brittonii.*
A. Nutlets not winged except rarely and in immature condition J.
J. Nutlets merely rugose or finely granulate-papillate K.
K. Nutlets canary yellow L.
L. Nutlets merely scabridulous, *i. e.*, with inconspicuous papillae.....1. *S. epilobiifolia.*
L. Nutlets with minute, wart-like papillae.....3. *S. lateriflora.*
K. Nutlets black or brown, finely granulate-papillate....12. *S. resinosa.*
J. Nutlets with conspicuous papillae M.
M. Nutlets yellowish or orange.....4. *S. Bolanderi.*
M. Nutlets brown or black N.
N. Nutlets with conical, more or less sharp-pointed papillae O.
O. Nutlets with very slender elongate papillae....21. *S. saxatilis.*
O. Nutlets with the papillae short, broad at base, abruptly pointed.....20. *S. versicolor.*
(Note: *S. versicolor* frequently has the nutlets orange.)
N. Nutlets with tuberous, flattened, obtuse papillae P.
P. Nutlets strikingly rosulate in appearance....16. *S. integrifolia.*
P. Nutlets not conspicuously rosulate Q.
Q. Nutlets with thin, laminate papillae.....13. *S. Drummondii.*
Q. Nutlets with thick papillae R.
R. Nutlets with irregularly disposed muriculate papillae.....5. *S. tuberosa.*
R. Nutlets with papillae regularly disposed S.
S. Nutlets about 2 mm. in diameter.....19. *S. serrata.*
S. Nutlets 1–1.5 mm. in diameter.....15. *S. pilosa.*
J. Nutlets with short, truncate papillae T.
T. Nutlets black.....14. *S. cardiophylla.*
T. Nutlets brownish U.
U. Nutlets with processes flat on top, frequently with median depression.....18. *S. canescens.*
U. Nutlets with papillae rounded on top, smooth....17. *S. Bushii.*
(Note: *S. canescens* might be looked for here; the nutlets are light brown or olive-green in color.)

1. S. EPILOBIIFOLIA Hamilton. Fig. 6. Stem simple or branched, erect, 1.5–8 dm. high, smooth or somewhat pubescent: leaves ovate or oblong-lanceolate, acuminate, sessile or subsessile, serrate, frequently purplish underneath, 1.5–6 cm. long; the upper gradually diminishing into the bracts: flowers solitary in the axils of the upper leaves; corolla with pale tube and violet-blue lips and galea, rarely pink or white, 1.5–2.5 cm. long; lower lip somewhat protruding: achenes yellow, merely scabridulous or slightly pebbled, about 1.5 mm. in diameter.—Monog. 32 (1832). *S. galericulata* of American authors, not L.—Newfoundland to British Columbia and southward to Arizona. The following specimens are representative. Newfoundland: *M. L. Fernald & K. M. Wiegand*, nos. 3930, 3929 and 6107; *B. L. Robinson & H. von Schrenk*, no. 103. Quebec: *H. St. John*, no. 90694; *J. Macoun*, no. 68667. Nova Scotia: *C. D. Howe & W. F. Lang*, no. 529; *M. L. Fernald & B. Long*, no. 22363. New Hampshire: *C. C. Stewart*, no. 4403. Massachusetts: *J. M. Greenman*, no. 2079. New York: *O. P. Phelps*, no. 805. Ontario: *J. Macoun*, no. 20850. Michigan: *J. H. Ehlers*, no. 125. Indiana:

O. E. Lansing, no. 2829. MINNESOTA: *M. A. Barber*, no. 7. SOUTH DAKOTA: *P. A. Rydberg*, no. 948. NEBRASKA: *P. A. Rydberg*, no. 1490. ASSINIBOIA: *J. Macoun*, no. 5848. MONTANA: *F. L. Scribner*, no. 216. WYOMING: *A. Nelson & E. Nelson*, no. 6558. UTAH: *S. Watson*, no. 835. ARIZONA: *J. T. Rothrock*, no. 245. CALIFORNIA: *C. F. Sonne*, no. 287 (P). OREGON: *W. C. Cusick*, no. 1939a. BRITISH COLUMBIA: *S. Brown*, no. 748.

Forma ROSEA (Rand & Redfield) Fernald, RHODORA xxiii. 86 (1921). *S. galericulata*, forma *rosea* Rand & Redfield, Fl. Mt. Desert, 137 (1894).

Forma ALBIFLORA (Millsp.) Fernald, l. c. (1921). *S. galericulata*, forma *albiflora* Millsp. Fl. W. Va. 428 (1892).

2. S. CHURCHILLIANA Fernald. A form intermediate between *S. lateriflora* and *S. epilobiifolia* and possibly a hybrid of these two: stems erect, branching, flexuous, the angles covered with minute ascending pubescence: flowers borne singly in the axils of the upper leaves or in axillary racemes, similar to those of *S. lateriflora*: corolla violet-blue, 1–1.5 cm. long: leaves thin, ovate, acuminate, short-petioled.—RHODORA iv. 137 (1902).—Gravelly river-thickets of Maine and adjacent New Brunswick. The following specimens are characteristic. MAINE: *M. L. Fernald & B. Long*, nos. 14455 (P), 14452, 14454 and 260; *M. L. Fernald*, no. 2088; *W. W. Eggleston & M. L. Fernald*, Valley of St. Francis River, August 12, 1902; *M. L. Fernald*, Valley of Aroostook River, September 8, 1897; *K. K. Mackenzie*, no. 3590 (M); *O. W. Knight*, Veazie, August 6, 1905, and no. 100; *J. A. Cushman*, no. 2134 (N); *J. R. Churchill*, Fort Kent, July 19, 1908 (N); *Kate Furbish*, East Livermore, July & August 1896 (N), South Poland, 1893 (N), Great Diamond Island, 1888 (N), Great Chebeague Island, June 11, 1902. NEW BRUNSWICK: *M. L. Fernald & B. Long*, no. 14453.

3. S. LATERIFLORA L. FIG. 7. Erect, mostly branched, 2–6 dm. high, smooth: leaves thin, oblong-lanceolate, acuminate, serrate, rounded at the base, petioled, 3–9 cm. long: inflorescence in axillary, rarely terminal, racemes: corolla bluish to whitish, 5–8 mm. long; lips equal in length: achenes yellow, with minute papillae on the surface.—Sp. Pl. ii. 598 (1753).—River-thickets or wet shaded places, from Newfoundland to British Columbia and southward to Florida and New Mexico. The following are representative. NEWFOUNDLAND: *M. L. Fernald & K. M. Wiegand*, no. 6102. QUEBEC: *S. F. Blake*, no. 5619; *M. L. Fernald & H. B. Jackson*, no. 12152. PRINCE EDWARD ISLAND: *M. L. Fernald, B. Long & H. St. John*, no. 7960. NOVA SCOTIA: *H. St. John*, no. 1443. MASSACHUSETTS: *B. L. Robinson*, no. 588. NEW JERSEY: *Gershoy*, no 589. PENNSYLVANIA: *A. A. Heller & E. G. Heller*, no. 653. WEST VIRGINIA: *J. M. Greenman*, no. 480. ONTARIO: *J. Macoun*, no. 21859. OHIO: *J. M. Greenman*, no. 1399. ILLINOIS: *Chase* (P), no. 514177. MISSISSIPPI: *S. M. Tracy*, no. 8752. MISSOURI: *E. J. Palmer*, no. 2651. NEBRASKA: *F. Clements*, no. 2781. NEW MEXICO: *C. Wright*, no. 1538.

Oregon: *J. C. Nelson*, no. 1832. Washington: *W. N. Suksdorf*, no. 1001. British Columbia: *J. Macoun*, no. 54677.

Forma rhodantha Fernald, Rhodora xxiii. 86 (1921). A form with pinkish flowers, found in Quebec.

Forma albiflora (Farwell) Fernald, Rhodora xxiii. 86 (1921). *S. lateriflora* var. *albiflora* Farwell, Mich. Acad. Sci. Ann. Rep. xix. 249 (1917). A form with white flowers.

4. S. Bolanderi Gray. Erect, tall and very slender, virgulate or branched from below, 1.5–5.5 dm. high, leafy, pubescent or short-hairy: leaves broadly obovate, obtuse, sessile, crenate, or the upper nearly entire; corolla nearly as in *S. antirrhinoides*, but white or creamy in color and dilated at the throat, 10–15 mm. long; lips subequal: nutlets yellowish, with slender papillae.—Proc. Am. Acad. vii. 387 (1867). —River-bottoms, etc., in California from Plumas County southward.[1] The following are characteristic. *H. M. Hall*, no. 696 (M); *G. Hansen*, no. 448 (M); *C. R. Orcutt*, no. 429 (M); *A. Eastwood*, no. 4199.

Var. **californica** (Gray), n. comb. Differs from the above in being very finely puberulent, somewhat more rigid; all but sometimes the lowest pairs of leaves entire, petioled; the corolla mostly white, sometimes tinged with blue, 15–18 mm. long.—*S. californica* Gray, Syn. Fl. ii. 381 (1878). Including *S. viarum* Heller, Muhlenbergia, i. 32 (1904).—In California from Amador County northward to Tehama County. The following represent the variety. *J. D. Hooker & A. Gray*, Calaveras County, 1877; *A. A. Heller*, nos. 5786, 7020, 12379; *E. Braunton*, no. 1047 (M); *T. Bridges*, no. 304; *J. Torrey*, no. 406; *C. F. Sonne*, no. 286 (M); *A. Eastwood*, no. 1530; *M. E. Jones*, no. 13485 (M); *J. P. Tracy*, no. 2297.

This variety includes a number of forms intermediate between *S. Bolanderi* and *S. antirrhinoides*. In fact it might well be regarded as a hybrid of these two. In the main it has more of the characters of the former than of the latter and hence is referred here rather than to *S. antirrhinoides* as at first done by Gray. Fruiting material is too poorly represented for good comparison.

5. S. tuberosa Benth. Fig. 12. Mostly simple and erect, frequently with many leafy stems from a common base, or even decumbent, villous to nearly glabrous, 2.5–15 cm. high, or, when trailing, up to 3.5 dm. long: leaves villous or nearly glabrous, petioled, broadly ovate, with few coarse crenations; base rounded, truncate or sometimes cuneate: flowers short-pedicelled, solitary in the upper axils: corolla dark-blue or purple, rarely curved, 1–2 cm. long; the lips subequal: calyx villous: nutlets with projections somewhat muriculate, dark-brown when fully mature.—Lab. Gen. et Sp. 441 (1832–1836).—Foothills or valleys throughout California and southern Oregon. The following specimens are representative. California: *W. H.*

[1] One sheet is from Indian Valley, Plumas County, *J. G. Lemmon*, autumn, 1886; the rest from Amador Co. southward.

Brewer, no. 357; *C. C. Parry*, no. 338; *W. W. Jones*, no. 285; *J. G. Lemmon*, no. 338; *A. A. Heller*, no. 7288; *C. R. Orcutt*, no. 1343 (M). OREGON: *H. S. Prescott*, Grants Pass, April 5, 1912; *T. Howell*, no. 1252 (M); *E. W. Hammond*, no. 329 (M).

6. S. PARVULA Michx. FIG. 2. Erect, simple or branching, 1–3.5 dm. high, usually many-stemmed from a moniliform tuberiferous base, pubescent nearly throughout: leaves thin, greenish, oblong-ovate, much broader at the base, 0.8 to 2 cm. long, prominently nerved beneath; the upper sessile; the lower short-petioled, occasionally with few coarse teeth: flowers solitary in the upper axils: corolla 0.7–1 cm. long, blue; the lower lip longer and flaring: calyx with upper lip commonly purple: nutlets papillose with tubercles, banded, showing close relation with *S. nervosa*.—Fl. ii. 11 (1803). *S. campestris* Britton, Mem. Torr. Club, v. 283 (1894). *S. parvula*, var. *mollis* Gray, Syn. Fl. ii. 380 (1878), in part.—On richer soils of the Great Lake region and the Mississippi valley, Quebec and Ontario southward to Georgia and Texas. The following are characteristic. QUEBEC: *W. F. Macrae*, "in river St. Lawrence opposite Montreal" (M); *A. S. Pease*, no. 12940; *Mrs. Shepard*. ONTARIO: *J. Macoun*, Pelee Point, Lake Erie, August 6, 1901. MICHIGAN: ex. Herb. *E. F. Smith*, Ionia, 1877. VERMONT: *L. R. Jones & W. W. Eggleston*, Burlington, July 12, 1894. NEW YORK: *A. Wood*, Dexter. OHIO: *E. L. Moseley*, Marblehead, May 25, 1895. ILLINOIS: *H. M. Smith*, no. 5924; *A. S. Pease*, no. 12555; *J. M. Greenman*, no. 2614 (M). TENNESSEE: *E. J. Palmer*, no. 17333 (M); *S. M. Bain*, no. 38. VIRGINIA: *J. Q. A. Fritchey*, Richmond, August 28, 1888. GEORGIA: *T. J. Wray*, Augusta (P); *S. Boykin* (P). MISSOURI: *O. E. Lansing*, no. 3033; *J. Davis*, no. 3434 (M); *E. J. Palmer*, no. 5632 (M). TEXAS: *E. J. Palmer*, no. 5034 (M); *J. Reverchon*, no. 3245 (M). LOUISIANA: *E. J. Palmer*, no. 7217 (M). OKLAHOMA: *E. J. Palmer*, no. 5956 (M); *H. W. Houghton*, no. 3582½. ARKANSAS: *B. F. Bush*, no. 1435 (M).

Var. AMBIGUA (Nutt.) Fernald. Similar to above but slightly more rigid in aspect; stem and under surface of leaves usually purplish, glabrous or with very slight appressed puberulence; the upper surface of the leaves sometimes with spreading hairs; the leaves narrower and rarely toothed.—RHODORA iii. 201 (1901). *S. ambigua* Nutt. Gen. ii. 37 (1818). *S. parvula*, authors.—In drier habitats, Maine to Minnesota and southward to Texas and westward to Nebraska. The following are characteristic. MAINE: *M. L. Fernald*, no. 466; *J. C. Parlin*, no. 305. CONNECTICUT: *G. Thurber*, East Haven, 1855; *E. B. Harger*, no. 6411 (P). PENNSYLVANIA: *W. F. Detwiller*, Mercersburg, May 19, 1845 (P); *S. D. Ingram*, Harrisburg (P). NEW JERSEY: *P. Dowell*, no. 6027. DELAWARE: *W. M. Canby*, Rehoboth, July, 1878 (P). INDIANA: *A. H. Young*, Lafayette, June, 1879 (P). TENNESSEE: *A. Ruth*, Knoxville, June, 1897 (P). ILLINOIS: *S. B. Mead*, Augusta, 1845 (P); *H. N. Patterson*, Oquawka, August, 1873; *H. A. Gleason*, Rantoul, July 5, 1907. MISSOURI: *B. F. Bush* no. 336; *O. E. Lansing*, no. 2977. LOUISIANA: *J. Hale*, Alexandria

(P). Texas: *E. Hall*, no. 453 (M). Oklahoma: *G. W. Stevens*, no. 2235. Iowa: *R. Coombs & C. R. Ball*, no. 569 (M). Kansas: *J. B. Norton*, no. 411 (M). Nebraska: *H. J. Weber*, Lincoln, June, 1890 (M). South Dakota: *H. O. Powell*, White Rock, June, 1902. Minnesota: *E. P. Sheldon*, Princeton, July, 1892.

7. S. nervosa Pursh. Fig. 1. Very slender, mostly simple, but frequently branched, 1.5 dm. high: internodes separating widely the opposite pairs or leaves: leaves ovate or oblanceolate, toothed, smooth, but occasionally sparsely strigose on the upper surface, 2–4.5 cm. long; the lower short-petioled; the upper sessile: flowers solitary in the axils of the entire upper leaves: corolla bluish, about 1 cm. long; the lower lip protruding beyond the upper: nutlets winged, yellowish or buff, with muriculate papillae.—Fl. ii. 412 (1814). *S. gracilis* Nutt. Gen. ii. 37 (1818).—Pennsylvania to Virginia, westward and southward to Missouri and Alabama. The following specimens are representative. Pennsylvania: *E. B. Bartram*, Homewood near Pillsbury, June 15, 1907 (P); *S. Brown*, Quakertown, June 3, 1894 (P); *A. A. Heller*, Lancaster, May 28, 1889. New Jersey: *J. Torrey*. Delaware: *W. M. Canby*, June 12, 1897 (P). Maryland: *E. B. Bartram*, Conowingo, May 30, 1907 (P). Virginia: *C. S. Williamson*, Great Falls of Potomac, May 28, 1909 (P). West Virginia: *W. M. Pollock*, May 30, 1896. Kentucky: *S. F. Price*, Bowling Green, May 12, 1900 (M); *E. J. Palmer*, no. 17803 (M). Tennessee: *E. J. Palmer*, no. 17601 (M); *A. Ruth*, Knox Co., May, 1893 (M). Alabama: *H. Eggert*, Etowah Co., June 30, 1897 (M). Missouri: *B. F. Bush*, Dunklin Co., May 22, 1892 (M); *H. Eggert*, St. Louis Co., June 5, 1877 (M); *S. B. Mead*, May 30, 1848 (M); *E. J. Palmer*, no. 15585; *E. Hall*, no. 11397 (M). Indiana: *A. H. Young*, Hanover, August, 1881 (P). Ohio: *W. S. Sullivant*, 1840 (P); *E. L. Moseley*, Florence, August 7, 1897.

Forma **ternata**, n. f., foliis ternatis.—One sheet collected by *C. W. Short* at Lexington, Kentucky, 1835 (P).

8. S. angustifolia Pursh. Fig. 3. Erect, stems many from the base, or branched above, or frequently solitary, 1–2 dm. high, minutely pubescent or almost glabrous, from a moniliform tuberiferous or somewhat fibrous base, purplish below: leaves linear to oblong-ovate, obtuse, practically sessile, commonly conduplicate, entire, 1–3 cm. long, except the lower; these when present, petioled, few-toothed, cordate, small, commonly purplish below: flowers in the upper axils, on pedicels 5–8 mm. long: corolla curved at the slender base, commonly 2–2.5 cm. long but reaching 3 cm., not broadening until 5–10 mm. above the calyx: lips subequal or the lower slightly longer, various as to color, deep blue to purple: nutlets large, with slender papillae and faintly banded at the base.—Fl. ii. 412 (1814). Including *S. Austinae* Eastw., Bull. Torr. Bot. Club, xxx. 493 (1903) and *S. linearifolia* Eastw., l. c. 493 (1903).—Stream-bars or on rocky hillsides from British Columbia and Idaho to southern California. The following are representative. Idaho: *W. Trelease*, no. 4883

(M); *A. A. & E. G. Heller*, no. 3150 (P); *J. H. Sandberg*, no. 8689 (M); *J. B. Leiberg*, no. 1548; *J. F. Macbride*, no. 104. BRITISH COLUMBIA: *J. M. Macoun*, no. 67887. WASHINGTON: *F. O. Kreager*, no. 10; *C. V. Piper*, nos. 1570, 1571; *A. D. E. Elmer*, no. 900; *R. M. Horner*, no. R178B411. OREGON: *E. W. Hammond*, no. 330 (M); *W. C. Cusick*, nos. 75, 2145; *M. Spalding*, April 28; *E. P. Sheldon*, no. 8007. CALIFORNIA: *Culbertson*, no. 4446; *C. C. Parry & J. G. Lemmon*, no. 337; *A. Gray*, Chico (field), February to May, 1885; *C. A. Purpus*, no. 5605 (M); *S. B. Parish*, no. 3122 (M); *L. Abrams*, no. 2778; *H. M. Hall & H. P. Chandler*, no. 242; *A. A. Heller*, no. 7889; *A. Eastwood*, no. 1015.

Var. **canescens** Gray. In many respects similar to the above, mostly simple, virgulate, canescent; leaves linear-oblanceolate, 2–4.5 cm. long, nearly tomentose, firm, not conduplicate, ascending sharply; corolla slender and gracefully curved.—Bot. Calif. i. 603 (1876). *S. siphocampyloides* Vatke, Bot. Zeit. xxx. 717 (1872).—In CALIFORNIA from Sierra County southward on foot-hills and mountains. The following are representative. *H. N. Bolander*, nos. 4946 (M), 3947; *W. R. Dudley*, no. 4131; *A. D. E. Elmer*, no. 4434 (M); *W. H. Brewer*, no. 1285.

9. S. ANTIRRHINOIDES Benth. FIG. 4. Mostly erect, somewhat spindling, simple or branched, from a chiefly fibrous base, 1–3.5 dm. high, minutely pubescent: leaves ovate-oblong, obtuse, mostly short-petioled, never over 2.5 cm. long; all but the very lowest entire: flowers in the upper axils, on pedicels 5–10 mm. long, commonly 1–1.5 cm., never over 2 cm. long; the corolla-tube flaring from immediately above the calyx; the lower lip usually longer, deep blue to violet in color: nutlets with slender papillae, frequently strikingly winged, suggesting those of *S. parvula* and *S. nervosa*.—Bot. Reg. viii. 1493 (1822). *S. sanhedrensis* Heller, Muhlenbergia, i. 31, (1904). *S. nevadensis* Eastwood, Bull. Torr. Bot. Club, xxx. 492 (1903).—Rocky banks and slopes, Idaho and Utah to California and Oregon. The following are characteristic. IDAHO: *J. F. Macbride*, nos. 937 (M), 482 (M); *A. Nelson & J. F. Macbride*, no. 1208. UTAH: *L. H. Pammel & R. E. Blackwood*, no. 3778. NEVADA: *A. A. Heller*, no. 11120; *M. E. Jones*, no. 4036; *A. Nelson & J. F. Macbride*, no. 1927. CALIFORNIA: *A. A. Heller & P. B. Kennedy*, nos. 8798, 8843 (M); *J. P. Tracy*, no. 3399; *L. E. Smith*, no. 316; *A. A. Heller*, nos. 5894, 12111. OREGON: *E. Hall*, no. 398; *J. C. Nelson*, no. 2668; *T. Howell*, no. 1253 (M).

10. S. BRITTONII Porter. Erect, simple or branched, minutely pubescent or puberulent, usually 1–2 dm. high: underground stems frequently with moniliform tubers: leaves obovate, acuminate at each end or obtuse at tip, somewhat viscid, sometimes purplish beneath, 1.5–3 cm. long, hardly petioled; margins subrevolute; nerves prominent dorsally: corolla slender at base, gradually dilated to ampliate throat and lips, blue, 2–3 cm. long: nutlets dull black, mostly angled with tuberculate processes.—Bull. Torr. Bot. Club, xxi.

177 (1894). *S. resinosa* of Gray, not Torrey.—On foot-hills or plains in northern Colorado and southern Wyoming. The following specimens are representative. Colorado: *G. E. Osterhout*, no. 2587 (P); *H. N. Patterson*, no. 296; *C. C. Parry*, no. 85 (P); *T. S. Brandegee*, no. B 413 (P); *E. B. Payson*, Eldora, July 7, 1919. Wyoming: *A. Nelson*, nos. 94 and 7009.

11. S. nana Gray. Fig. 5. Small, usually 4–6 cm. high, cinereous-puberulent, several branches from the base: rootstocks yellow, with moniliform tubers or simply tuberiferous: leaves entire, ovate to obovate, with long attenuate base, or sometimes spatulate, 1–2 cm. long; nerves usually conspicuous on the lower surface of the leaf: corolla white, the lips equal: nutlets dull yellow with conical protuberances, sometimes angled or compressed.—Proc. Am. Acad. xi. 100 (1876). *S. Footeana* A. I. Mulford, Bot. Gaz. xix. 118 (1894).—Dry sandy hillsides in northwestern Nevada, northern California, southern Oregon, and southwestern Nevada. The following are representative. California: *L. E. Smith*, no. 390; *A. A. Heller*, no. 8086; *H. E. Brown*, no. 613; *E. Palmer*, no. 2602 (P). Nevada: *J. G. Lemmon*, no. 538; *M. E. Jones*, Wadsworth, June 16, 1897 (M); *P. B. Kennedy*, no. 1028 (M). Oregon: *M. E. Peck*, no. 6747; *J. B. Leiberg*, no. 472; *W. C. Cusick*, no. 1980. Idaho: *A. I. Mulford*, Black Cañon, June 18, 1802.

12. S. resinosa Torr. Fig. 8. Stems erect, few to many, from a woody base, 1–3 dm. high, puberulent: leaves ovate, entire, or the lower subcrenulate, attenuate at the base, slightly petioled or sessile, minutely pubescent, resiniferous, 1–2 cm. long; nerves prominent on the upper surface of the leaves: corolla bluish to violet, 12–20 mm. long; upper lip forming an arch with the tube; lower lip occasionally lightly blotched, equal to or exceeding the upper: nutlets about 1 mm. in diameter, black, minutely granular.—Ann. Lyc. N. Y. ii. 232 (1826). *S. Wrightii* Gray, Proc. Am. Acad. viii. 370 (1872).—Kansas to Texas and westward to Arizona, on dry grassy slopes or prairies. The following sheets are representative. Kansas: *J. M. Bates*, no. 4552; *C. L. Shear*, no. 72; *A. S. Hitchcock*, no. 410; *E. Bartholomew*, June 6, 1889 (M). Oklahoma: *R. L. Clifton*, no. 3025; *G. W. Stevens*, no. 1291; *P. J. White*, no. 28 (M); *W. H. Emig*, no. 776 (M). Texas: *E. Hall*, no. 457; *E. Palmer*, no. 1086-7; *A. A. Heller*, no. 1606; *F. Lindheimer*, no. 674; *E. J. Palmer*, nos. 14117 (M) 11563 (M), 13738 (M), 10229 (M). New Mexico: *G. Thurber*, no. 286; *C. Wright*, no. 1540; *O. B. Metcalfe*, no. 934; *A. Gordon*, no. 67 (M). Arizona: *L. N. Goodding*, nos. 848, 224 (M); *J. G. Lemmon*, no. 2860; *D. Griffiths*, no. 4809; *C. G. Pringle*, no. 15956.

Var. **brevifolia** (Gray), n. comb. Stems from a ligneous base, mostly over 2 dm. high, cinereous-puberulent: leaves narrowly oblong, entire: corolla 20–25 mm. long, flaring at the top.—*S. integrifolia*, var. *brevifolia* Gray in E. Hall, Pl. Tex. no. 458 (1873), name only. *S. brevifolia* Gray, Syn. Fl. ii. 380 (1878).—Northeastern Texas, on dry calcareous hills or rocky bluffs. The following specimens

represent the range and habit of the variety. *E. Hall*, no. 458 (P); *J. Reverchon*, nos. 440, 2059, 771 (M) and 2126 (M); *G. W. Letterman*, Texarkana, October 15–24, 1894, and Dallas, August, 1882.

This form was first given recognition by Dr. Gray as a variety of *S. integrifolia*, but was later raised to specific rank. It is, however, merely a variety of *S. resinosa*. An inspection of the range of *S. integrifolia* shows that it has no representative in Texas except var. *hispida*. Finally, the nutlet of *S. brevifolia* is an exact duplicate of that of *S. resinosa*. Although with leaves somewhat longer than those of the ordinary *S. resinosa* (about 1 cm.) a quirk in the nomenclatorial rules gives to this plant the somewhat paradoxical name of *S. resinosa*, var. *brevifolia*. Originally connected with *S. integrifolia*, the application of the name was apparent.

13. S. DRUMMONDII Benth. FIG. 11. Stems many, erect, branching at the base, villous-pubescent, mostly 1–2.5 dm. high: leaves slightly petioled or subsessile, oblong-ovate or oval, entire, 1–2 cm. long, or commonly less, undulate-crenate: calyx villous, frequently tinged with purple: corolla short, 8–12 mm. long, bluish purple or violet; the lower lip exceeding the upper, flaring, notched, violet-spotted: nutlets yellowish to dark brown, or blackish with age, with conical or frequently laminate processes.—Lab. Gen. et Sp. 441 (1832–1836). —*S. Helleri* Small, Fl. So. U. S. 1024 (1903).—Mostly on rich plains or in open woods throughout Texas, in adjacent Oklahoma and New Mexico, and running into Mexico. The following sheets are representative. NEW MEXICO: *C. Wright*, nos. 1539 and 1540. OKLAHOMA: *G. W. Stevens*, nos. 695 and 1078. TEXAS: *S. M. Tracy*, no. 7994; *G. Thurber*, San Antonio, April, 1853; *F. Lindheimer*, nos. 1095 and 143; *E. Hall*, no. 456; *B. F. Bush*, no. 627; *E. J. Palmer*, nos. 9685 (M) and 13482 (M); *G. Jermy*, no. 101 (M); *W. M. Canby*, no. 201 (M); *J. Reverchon*, no. 2065 (P); *H. A. Pilsbry*, New Braunfels, April 17–19, 1903 (P); *A. A. Heller*, no. 1503 (P); *H. C. Hansen*, no. 542 (M).

Somewhat variable in the size of respective parts, this species is yet constant enough not to warrant any breaking up into subdivisions. The shape of the corolla is especially constant. The nutlets serve to indicate a connection with the *S. nervosa*–*S. parvula* group.

14. S. CARDIOPHYLLA Engelm. & Gray. Stems slender, upright, branching, 3–6 dm. tall, puberulent, often purplish-tinted on the lower part: leaves petioled, deltoid or subcordate, mostly obtuse, crenate, 1.5–4 cm. long: inflorescence loose, leafy-bracted: corolla slender, 12–17 mm. long, blue: crest of calyx commonly purple: nutlets black, tuberculate with truncate processes, never merely granular as in *S. resinosa*.—Pl. Lindh. i. 19 (1845).—Arkansas and Texas, on gravelly hillsides or sandy woods. The following sheets

are representative. Arkansas: *F. L. Harvey*, no. 114; *E. J. Palmer*, no. 10503 (M); *G. W. Letterman*, Hot Springs, August 4, 1879 (M), and July or August, 188- (M). Texas: *J. Reverchon*, no. 3910; *R. A. Dixon*, no. 339; *F. Lindheimer*, no. 144; *E. Hall*, no. 454; *E. J. Palmer*, no. 7887 (M); *H. Eggert*, Palestine, June 10, 1899.

A distinct species with achenes that show closer relation to *S. pilosa* than to any other *Scutellaria*. The leaves also suggest a relation. It is interesting to note that toward the west *S. pilosa* runs out in Arkansas, though no intermediate forms between these two are found.

15. S. pilosa Michx. Stem erect, mostly slender and simple, the inflorescence sometimes branched, finely pubescent or hirsute, 2–7 dm. high; internodes frequently 10 cm. long: leaves petioled, crenate, the lower ovate or oblong-ovate, obtuse, abrupt or even truncate at the base, 2–8 cm. long; the upper subsessile and somewhat oblong-spathulate: corolla slender, bluish, 1–1.5 cm. long; lips subequal; the upper arched: calyx villous: nutlets with protuberances as in *S. serrata* (fig. 13) but smaller (1–1.5 mm. in diam.).—Fl. Bor.-Am. ii. 11 (1803). ? *S. caroliniana* Walt. Fl. Car. 163 (1788). Including var. β Benth. (*S. ovalifolia* Pers. Syn. ii. 136 (1807)) and *S. altamaha* Small, Fl. So. U. S., 1022 (1903).—River-banks or woodlands, New York to Michigan and southward to Georgia and Texas. The following are characteristic: New York: *J. Schenk*, Long Island, June 28, 1878 (M). Pennsylvania: *T. C. Porter*, Easton, July 10, 1868 (P); *B. Long*, Lancaster, June 22, 1909 (P). New Jersey: *C. W. Short*, Princeton, July 11, 1850 (P); *B. Long*, no. 5641 (P). District of Columbia: Washington, *E. S. Steele*, June 15, 1896. Virginia: *A. H. Curtiss*, Bedford County, June 15, 1871; *H. D. House*, no. 1046. West Virginia: *J. M. Greenman*, no. 478 (M). North Carolina: *J. R. Churchill*, Hot Springs, June 1, 1899; *A. A. Heller*, Hickory, June 23, 1893 (P). South Carolina: *W. Stone*, no. 546 (P); *Rev. J. Backman*, Charleston. Georgia: *A. H. Curtiss*, no. 6826 (M); *R. M. Harper*, no. 1358. Alabama: *C. Mohr*, Mobile, May, 1884 (M); *F. S. Earle & C. F. Baker*, Auburn, June 5, 1897 (M). Mississippi: *J. Skehan*, no. 77; *S. M. Tracy*, no. 4451. Louisiana: *J. Hale*, Alexandria (P); *C. R. Ball*, no. 656 (M). Texas: *C. Wright*. Oklahoma: *G. W. Stevens*, no. 2732. Arkansas: *N. M. Glatfelter*, Eureka Springs, July 17, 1898 (M). Missouri: *E. J. Palmer*, no. 5802 (M); *B. F. Bush*, no. 667 (M). Tennessee: *H. Eggert*, Sherwood, June 6, 1897 (M); *T. H. Kearney*, no. 871 (M). Kentucky: *C. W. Short*, Lexington (P). Indiana: *C. C. Deam*, no. 20417. Michigan: (M) no. 109374. Illinois: *E. J. Palmer*, no. 15399.

Var. hirsuta (Short) Gray. Like the preceding but taller and with leaves having coarser crenations, and longer pubescence.—Syn. Fl. ii. 379 (1878). *S. hirsuta* Short, Cat. Pl. Ken. 8 (1835).—Not a very marked variety; found only in northern Kentucky. We have examined the following sheets, all collected by *C. W. Short:* Louis-

ville, September, 1835 (P), 2 sheets; 1842, 2 sheets; 1842, no. 109393 (M); 1846, no. 109395 (M); 1848, nos. 109394 (M), 109396 (M), and 109397 (M).

16. S. INTEGRIFOLIA L. FIG. 10. Erect, simple or branched at the top, 2–7 dm. tall, covered with fine puberulence: the upper leaves linear-oblong, gradually narrowed (when present) to the short petiole, 1.5–6 cm. long; the lower strongly petioled, ovate or cordate, obtuse, crenate, sometimes deciduous, leaving the stem with only entire leaves: corolla 18–24 mm. long, bluish or purple; the lower lip very ampliate; the upper broad and arching: nutlets with flattish papillae giving it a rosulate appearance.—Sp. Pl. ii. 599 (1753). *S. hyssopifolia* L. Sp. Pl. ii. 599 (1753). *S. polymorpha* Hamilt. Monog. 38 (1832).—Low moist ground from Massachusetts south to Florida and Mississippi. The following are representative. PENNSYLVANIA: *E. B. Bartram*, no. 1078; *F. W. Pennell*, no. 69 (P); *H. W. Pretz*, no. 7559 (P). NEW JERSEY: *B. Long & S. Brown*, no. 17 (P); *W. Stone*, Medford, July 4, 1910 (P). DELAWARE: *E. Tatnall*, Wilmington, 1886, Porter, June 6, 1874. MARYLAND: *W. R. Maxon*, no. 5918. VIRGINIA: *A. A. Heller*, no. 930; *B. L. Robinson*, Buckroe, May 21, 1912. NORTH CAROLINA: *T. G. Harbison*, Waynesville, July 1, 1897; *Biltmore Herbarium*, no. 954. SOUTH CAROLINA: *J. Perkins*, Summerville, April 29–May 10, 1918; *J. Davis*, no. 8381 (M). GEORGIA: *H. Eggert*, Belair, May 22, 1899 (M). FLORIDA: *S. M. Tracy*, no. 9162; *A. A. Eaton*, no. 1410. ALABAMA: *A. Ruth*, no. 540 (M); *C. Mohr*, Mobile, May, 1891 (M). KENTUCKY: *C. W. Short*, Flats of Red River (P). TENNESSEE: *A. Ruth*, no. 120; *H. Eggert*, Tullahoma, June 9, 1897 (M). MISSISSIPPI: *J. Skehan*, no. 63.

Var. MAJOR Chapm. More rigid in habit, rather heavily pubescent, 2–8 dm. high; with several pairs of dentate, petioled basal leaves, these larger than the bracts.—Fl. So. U. S. 323 (1860). Incl. *S. arenicola* Small, Bull. Torr. Bot. Club, xxv. 143 (1898).—Low sandy locations, Georgia and Florida to Mississippi. The following specimens are characteristic. FLORIDA: *A. H. Curtiss*, nos. 2060 and 2058; *G. V. Nash*, no. 1316; *A. A. Eaton*, no. 1153; *H. J. Weber*, no. 514 (M). MISSISSIPPI: *S. M. Tracy*, no. 4453 (M); *J. Skehan*, Ocean Springs, May 8, 1895 (M) and no. 62. GEORGIA: *Mrs. Say* (?), Savannah (P).

Var. HISPIDA Benth. A slender form, reddish in color when dried, stem and leaves distinctly pilose: the leaves thin: the crenate basal ones, when present, not exceeding the upper cauline leaves.—Lab. 435 (1832–1836).—Florida to Arkansas and Texas on moist sandy ground. The following are characteristic. FLORIDA: *A. H. Curtiss*, no. 6645 (M); *S. M. Tracy*, no. 9162 (M), (M) no. 109080. GEORGIA: *H. Eggert*, DeKalb Co., July 24, 1897; (M) no. 788487. LOUISIANA: *J. Hale*, Alexandria (P); *E. J. Palmer*, no. 7604 (M); *C. R. Ball*, no. 517; *J. F. Joor*, Madisonville, May 4, 1888 (M); *T. Drummond*, no. 248. TEXAS: *J. Reverchon*, no. 2127 (M); *E. Hall*, no. 455. ARKANSAS: *E. J. Palmer*, no. 10522 (M), *H. Eggert*, Jefferson Co., June 8, 1898 (M).

Var. MULTIGLANDULOSA Kearney. A short-stemmed leafy form, never exceeding 2.5 dm.; puberulent or pilose on the leaf-nerves and margins and on the stem: leaves oblong-ovate or spatulate, slightly, if at all petioled, entire, revolute-margined; occasionally 1–3 pairs of small, dentate petioled basal leaves, but these always shorter than the upper: flowers in the upper axils, the inflorescence appearing scarcely racemose: corolla as in the species.—Bull. Torr. Bot. Club, xxi. 482 (1894).—Pine barrens or dry open ground, Georgia and Florida to Louisiana. The following are characteristic. FLORIDA: *A. S. Hitchcock*, Suwanee Co., June–July, 1898 (M), and no. 477 (M); *C. S. Williamson*, Palatka, April, 1897 (P); *Dr. Leavenworth*, Fort King (P). GEORGIA: *R. M. Harper*, no. 822. ALABAMA: *Gates & Jewett*, Mobile. LOUISIANA: *E. J. Palmer*, no. 7959 (M).

Var. **glabriuscula** (Fernald), n. comb. Much like the variety *hispida*: slender, 2–5 dm. high, simple or branched, very slightly pubescent or glabrous: inflorescence racemose: leaves on distinct petioles, practically glabrous; the lower sometimes dentate: corolla subglabrous.—*S. glabriuscula* Fernald, Bot. Gaz. xxxiii. 156 (1902). "*S. hyssopifolia* L." on many herbarium sheets, *nomen dubium*.—Mostly on sandy pine lands, Georgia and Florida to Mississippi. The following serve to represent the variety. GEORGIA: *R. M. Harper*, no. 885. FLORIDA: *A. H. Curtiss*, nos. 6097, 3, and 13425 (M); *G. V. Nash*, no. 2277. ALABAMA: *H. Eggert*, Cullman, June 18, 1897 (M); *F. S. Earle & C. F. Baker*, Evergreen, June 6, 1897 (M). MISSISSIPPI: *J. Skehan*, no. 22603; *S. M. Tracy*, no. 4900.

Var. **floridana** (Chapm.), n. comb. A very slender linear-leaved form, minutely pubescent: lips of the corolla very broad.—*S. floridana* Chapm. Fl. So. U. S. 324 (1860).—Probably confined to the pine barren swamps near Apalachicola in western coastal Florida. The following are representative. (M) nos. 788588 (Apalachicola), 108997 (*D. U. Dean*), 108999, 109000 (Herb. Chapm.); *A. W. Chapman*, no. 13207 (M), and Apalachicola (ex. Herb. J. Carey).

17. S. BUSHII Britton. FIG. 15. Erect, mostly caespitose in habit; stems simple, whitish-pubescent or puberulent, 1.5–3.5 dm. high: leaves entire, oblanceolate, obtuse, sessile: nutlets with more wart-like, less rosulate papillae: otherwise as in *S. integrifolia* var. *multiglandulosa* to which it is nearest related.—Man. 785 (1901).—Rocky barrens or hillsides in Carter and Shannon Counties, MISSOURI. The following are representative: *B. F. Bush*, nos. 49 (M). 189, 378, 7817 (M), 461 (M), 48 (M), 4737 (M); *E. J. Palmer*, no. 19496.

18. S. CANESCENS Nutt. FIG. 14. Erect, tall, much branched at the top, canescent throughout except the upper surface of the leaves, 3–12 dm. high: leaves ovate-lanceolate, acute to cordate at the base, crenate, usually glabrous above, 5–12 cm. long, on petioles 1.5–4 cm. long: inflorescence mostly panicled: corolla 18–25 mm. long; upper lip very much arched over the shorter lower one: nutlets with truncate papillae, brownish, close to those of *S. serrata* but smaller and with blunter papillae.—Gen. ii. 38 (1818). *S. incana* Muhl. Cat.

56 (1813), *nomen subnudum*.—Dry woods, river-banks, etc., Pennsylvania to Wisconsin and south to Arkansas and Georgia. The following represent the plant and its range. PENNSYLVANIA: *O. E. Jennings*, Glenshaw, August 3, 1918; *T. C. Porter*, Huntingdon Co. INDIANA: *C. C. Deam*, no. 5183. ILLINOIS: *H. A. Gleason*, no. 2617. WISCONSIN: *T. J. Hale*, Lake Pepin, 1861. KANSAS: *A. S. Hitchcock*, no. 797. MISSOURI: *B. F. Bush*, no. 6113; *E. E. Sherff*, no. 635. ARKANSAS: *F. L. Harvey*, no. 109. TENNESSEE: *S. M. Bain*, no. 323. KENTUCKY: *C. W. Short*, 1840 (M). WEST VIRGINIA: *W. M. Pollock*, Upshur Co., July 8, 1895 (M). NORTH CAROLINA: *T. G. Harbison*, Waynesville, May 30, 1897. GEORGIA: *R. M. Harper*, no. 1368.

Var. PUNCTATA Chapm. Like above but with foliage glabrate and densely punctate.—Fl. So. U. S. 323 (1860).—North Carolina, Georgia and Florida. The following are characteristic. NORTH CAROLINA: *J. D. Smith*, August 7, 1882, *C. S. Williamson*, Balsam, July, 1897. GEORGIA: *J. K. Small*, Rabun Co., August 11, 1893; *C. S. Williamson*, Atlanta, August, 1896. FLORIDA: *G. V. Nash*, Bellair, September 3, 1895, (M) nos. 108778 and 108875.

19. S. SERRATA Andr. FIG. 13. Stem erect, 2.5–6 dm. high, nearly always simple, with from 3–5 pairs of leaves: leaves thin, mostly glabrous, ovate, acuminate at both ends or rounded at the base, serrate or crenate, 2.5–10 cm. long, on slender petioles 2.5 cm. or less long; the lower pairs smaller; the floral leaves abruptly reduced and becoming entire: inflorescence with rare exceptions a simple terminal raceme: corolla violet-blue, 2–3 cm. long; the lower lip nearly equalling the upper, sometimes appearing longer by protrusion at right angles from the tube: nutlets dark brown, about 2 mm. in diameter, with obtusely pointed papillae.—Bot. Rep. t. 494 (1808). *S. laevigata* Aiken in Eaton, Man. ed. 6: 333 (1833).— Woods and damp habitats, Pennsylvania to Missouri and North Carolina. The following represent the plant and its range. PENNSYLVANIA: *G. W. Smith*, Delaware Co., June 23,— (P); *J. Pennell*, no. 2713 (P); *E. B. Bartram*, Darby Creek, July 21, 1907 (P); *U. C. Smith*, no. 1177 (P). MARYLAND: *J. D. Smith*, Patapsco Valley, Howard Co., May 25, 1881; *J. J. Carter*, Conowingo, June 1, 1906. DISTRICT OF COLUMBIA: *E. S. Steele*, Washington, May 19, 1896; *T. Morong*, May 21, 1877 (M). WEST VIRGINIA: *F. W. Hunnewell*, July 4–6, 1914. VIRGINIA: *S. B. Buckley*, June, 1838 (M); *A. H. Curtiss*, Bedford Co., June 6, 1872 (M); *H. D. House*, no. 858 (M). NORTH CAROLINA: *W. W. Ashe*, no. 6445; *Biltmore Herbarium*, Biltmore, no. 1250b. TENNESSEE: *A. Ruth*, no. 116. ILLINOIS: ex. Herb. *G. Thurber*. MISSOURI: Pilot Knob, June 17, 188-.

Var. **montana** (Chapm.), n. comb. Similar to above, but stems and leaves glandular-pubescent; occasionally the upper leaves nearly hastate or very simply serrate: corolla bluish, strongly ampliate upward, 3 cm. or slightly more in length.—*S. montana* Chapm., Bot. Gaz. iii. 11 (1878). Inc. *S. Mellichampii* Small, Fl. 1022 (1903).—

In the mountains of northern Georgia, western North Carolina, South Carolina, southern Tennessee, and northern Alabama. The following are representative. South Carolina: *Mellichamp*, no. 14 (M), and Bluffton, 1872 (M). Georgia: *A. W. Chapman*, Rome (M); (M) nos. 109124, 109125, 788591 and 109485. North Carolina: *T. G. Harbison*, Highlands, July 20, 1904. Tennessee: *J. R. Churchill*, Chattanooga, May 21, 1911; *J. F. James*, Spring City, June 11, 1883. Alabama: *H. Eggert*, Springville, July 7, 1898; *S. Watson*, Queensboro, 1857.

20. S. versicolor Nutt. Fig. 9. Erect, glandular-hairy, especially in the inflorescence, which is commonly branched, 2–8 dm. high: leaves broad, cordate, rugose, crenate, 3–12 cm. long, long-petioled: corolla 1.7–2.5 cm. long, slender up to the throat, ampliate at the lips, blue to purple at the limb, but whitish on the tube: nutlets buff to orange in color, the processes tuberculate-conical.—Gen. ii. 38 (1818). ? *S. cordifolia* Muhl., Cat. 56 (1813), *nomen subnudum*. *S. cordifolia* var. *pilosissima* Mack. & Bush, Trans. Acad. Sci. St. Louis, xii. 84 (1902), in part.—Wisconsin and Iowa to Louisiana and eastward to North Carolina. The following are representative. Wisconsin: *T. J. Hale*, Maiden Rock, 1861 (M); *Lapham* (P). Iowa: *A. S. Hitchcock*, Iowa City, 1888; *C. R. Ball*, no. 1588 (M). Illinois: *F. C. Gates*, no. 10828 (M); *O. E. Lansing*, no. 62; *H. C. Skeels*, no. 388; *E. E. Sherff*, no. 320; *H. A. Gleason*, no. 1842. Missouri: *B. F. Bush*, nos. 5851, 725 (M). Arkansas: no. 5912 (M). Louisiana: *Dr. Carpenter*, Jackson, June; *E. J. Palmer*, no. 7601. Mississippi: *S. M. Tracy*, no. 4896. Kentucky: *S. F. Price*, Bowling Green. Tennessee: *E. J. Palmer*, no. 17640 (M). Ohio: *E. L. Moseley*, Margaretta, June 6, 1895. Virginia: *A. H. Curtiss*, Peaks of Otter, August 6, 1871. Maryland: *W. E. A. Aikin*, Harper's Ferry. North Carolina: *R. Thaxter*, Cullowhee, June 15–July 15, 1887; *C. S. Williamson*, Weldon, August, 1892 (P). Grades gradually into

Var. bracteata Benth. This form as found in Texas is very distinct, with floral bracts showy and much exceeding the combined length of pedicel and calyx. The leaves of the stem gradually merge into the bracts.—Lab. Gen. et Sp. 433 (1832–1836). *S. cordifolia* var. *pilosissima* Mack. & Bush, Trans. Acad. Sci. St. Louis, xii. 84 (1902), in part. *Lindheimer's* no. 492, *J. Reverchon's* nos. 769 and 253, and *C. Wright's* no. 476 are typical. It is probable also that certain plants from Arkansas and Missouri should be referred here, but one hardly knows where to stop.

Var. minor Chapm. Very similar to typical *S. versicolor*, having its diminutive size but with much smaller ovate, rugose leaves.—Fl. So. U. S. 323 (1860). *S. rugosa* Wood, Cl. Bk. 246 (1848).[1]

In his earliest description Chapman allocates this form to the "dry woods near Washington, Wilkes County, Ga.," and later he merely states "upper districts." The plants which seem most logi-

[1] In later editions of his Class Book, Wood reduces his *S. rugosa* to *S. saxatilis*.

cally to be referred to this category occur rather scatteringly on the southern edge of the range of *S. versicolor*, and some of the specimens are not distantly related to *S. saxatilis*. However, Chapman had a different plant in mind. The following are taken as representatives. MISSOURI: *W. Trelease*, no. 721 (M); *B. F. Bush*, no. 791 (M); *K. K. Mackenzie*, Eagle Rock, September 23, 1896 (M). ARKANSAS: *E. J. Palmer*, no. 4750 (M). A plant collected at Harper's Ferry, and answering to the description of *S. rugosa*, collected at the same place, is also included here.

21. S. SAXATILIS Riddell. Erect, or somewhat assurgent and weak, glabrous or somewhat hairy, 1–5 dm. long: leaves thin, with few spreading hairs on the upper surface, obovate or cordate, obtuse, long-petioled; the upper crenate-serrate; bracts entire: corolla about 2 cm. long, slender; the upper lip not arched, nearly as in *S. versicolor*: nutlets resembling those of *S. versicolor*, but the protuberances somewhat longer and more acute.—Supp. Cat. Ohio Pl. 14 (1836).—Rocky woodlands from Pennsylvania to Kentucky and Tennessee. PENNSYLVANIA: *J. A. Schafer*, Jacobs Creek, Westmoreland County, July 20, 1900 (P); *C. S. Williamson*, Ohio Pyle, August 31, 1905. NEW JERSEY: *C. F. Parker*, no. 6619 (M). DELAWARE: *E. Tatnall*, Wilmington, September 8, 1858. DISTRICT OF COLUMBIA: *W. R. Maxon*, no. 6242. OHIO: *H. N. Mertz*, Steubenville, June 5, 1880 (P). WEST VIRGINIA: *Mr. & Mrs. E. S. Steele*, no. 31 (M). KENTUCKY: *C. W. Short*, no. 2 (P). TENNESSEE: *A. Ruth*, no. 545 (M); *A. H. Curtiss*, no. 2054.

Var. **arguta** (Buckley), n. comb. This is doubtfully given rank as a variety of the above. It is small, assurgent, with ovate, sharply dentate leaves scatteringly pilose, and is confined to the mountains of North Carolina and Tennessee.—*S. arguta* Buckley, Am. Journ. Sci. xlv. 170, 177 (1843).—The following represent the plant. NORTH CAROLINA: *Biltmore Herbarium* (G), no. 7171; TENNESSEE: *A. Ruth*, no. 119, 8.

COLORADO COLLEGE,
Colorado Springs, Colorado.

EXPLANATION OF PLATES 140 AND 141.

Nutlets of *Scutellaria*, about × 25. Fig. 1, *S. nervosa;* fig. 2, *S. parvula;* fig. 3, *S. angustifolia;* fig. 4, *S. antirrhinoides;* fig. 5, *S. nana;* fig. 6, *S. epilobiifolia;* fig. 7, *S. lateriflora;* fig. 8, *S. resinosa;* fig. 9, *S. versicolor;* fig. 10, *S. integrifolia;* fig. 11, *S. Drummondii;* fig. 12, *S. tuberosa;* fig. 13, *S. serrata;* fig. 14, *S. canescens;* fig. 15, *S. Bushii*.

A NEW SATUREJA FROM FLORIDA.

C. A. Weatherby.

Mr. W. W. Ashe recently sent to the Gray Herbarium for determination specimens of a shrubby *Satureja* from Florida which he suspected was undescribed and which proves to be indeed a well-marked new species. It is a pleasure to associate with it the name of its discoverer.

Satureja **Ashei**, n. sp., humilis, circa 2 dm. alta, fruticosa, ramosa, tota ramis veteribus corollisque exceptis glanduloso-puberulens; cortice griseo; foliis 5–7 mm. longis oppositis in ramulis brevibus (3–6 cm.) plus minusve confertis et internodiis saepe longioribus, subsessilibus, lanceolatis vel anguste obovatis, obtusis, integris, resinoso-punctatis, marginibus valde revolutis; pedunculis singulis in axillis foliorum superiorum non reductorum anthesi 2–3.5 mm. longis, in speciminibus visis unifloris, basin versus bibracteatis, bracteis oppositis foliis simillimis at ½–⅓ brevioribus; calice 6–7 mm. longo, 13-nervio, nervis extus prominentibus, inter nervos resinoso-punctato, bilabiato, fauce dense barbato; labio superiore late patente, fere integro vel obscure obtuseque tridentato, marginibus lateralibus subrevolutis, intus purpurascente et puberulente; labio inferiore angustiore, profunde bidentato, dentibus 2–3 mm. longis, lineari-lanceolatis, breviter ciliatis, intus purpurascentibus; corolla calice subduplo longiore, textura firma, pubescente et resinoso-punctata, heliotropii colore lilacino-punctata, bilabiata; labio superiore circa 5 mm. longo, erecto, subplano, late obtuso, subintegro vel emarginato; labio inferiore paullo longiore, profunde trilobato, lobo centrali obovato, lobis lateralibus late quadratis, apice rotundatis vel subtruncatis, marginibus omnium loborum leviter sinuatis; staminibus 4, inferioribus longioribus, inclusis, parallellis, sub labium superius adscendentibus et eo paullo brevioribus; filamentis glabris; antheris circa 0.75 mm. longis et latis, purpurascentibus, liberis, bilocularibus; loculis distinctis, parallellis, margine exteriore sparse breviterque pilosis; stylo glabro, apice bifido, lobis subulatis; nuculis (testimonio collectoris) aurantiacis, laevibus.

A low shrub, about 2 dm. high, glandular-puberulent throughout except the old branches and corollas; stems often nearly 7 cm. thick at base, usually many from a single root, much branched within 5 or 6 cm. of the earth; bark gray, shreddy; leaves mostly 5–7 mm. long, subsessile, opposite, rather crowded on the short (3–6 cm.) branchlets and often longer than the internodes, lanceolate or narrowly obovate, obtuse, entire, resinous-punctate and with strongly revolute margins; peduncles in the specimens seen one-flowered, solitary in the axils of the upper leaves, which are not reduced, at flowering time 2–3.5 mm. long, having near the base two opposite bracts similar to the subtending leaves, but ½–⅓ smaller; calyx 6–7 mm. long, resinous-punctate between the 13 prominent nerves, densely villous-bearded

in the throat, bilabiate; upper lip broad-spreading, almost entire or obscurely and obtusely 3-toothed, purple-tinged and puberulent within, the lateral margins more or less revolute; lower lip narrower, spreading, deeply bidentate, the teeth 2–3 mm. long, linear-lanceolate, short-ciliate, purple-tinged within; corolla about twice as long as the calyx, of firm texture, pubescent and resinous-punctate, pale heliotrope with lilac spots, bilabiate; tube about equalling the calyx or slightly longer, straight; upper lip about 5 mm. long, erect, nearly plane, with broad, obtuse, subentire or emarginate apex; lower lip slightly longer, deeply three-lobed, the margins shallowly sinuate; central lobe obovate, lateral lobes broadly quadrate. rounded or subtruncate at apex; stamens 4, included, parallel and ascending under the upper lip and slightly shorter than it, the lower pair longest; anthers about 0.75 mm. long and wide, purplish, free, bilocular, not appendaged, the sacs distinct, parallel, sparsely short-pilose on the outer margins; style glabrous, the apex bifid, the lobes subulate; nutlets (according to the collector's notes) orange, smooth.—FLORIDA: sandy pine woods near Ocala, Marion Co., April, 1923, *W. W. Ashe*, TYPE in Hb. Gray; in the "scrub" near Astor Park, Lake Co., April, 1923, *Ashe* (herb. Ashe).

In aspect *S. Ashei* somewhat resembles *Conradina canescens* of the same general region; but in its straight corolla-tube, unappendaged anthers, and strongly bilabiate calyx with the teeth of the upper lip nearly or quite obsolete, clearly belongs in *Satureja*, sect. *Calomelissa*, subsect. *Coccineae* of Briquet. In that subsection it is nearest *S. dentata*. From its relatives of the southeastern United States it may be distinguished as follows:

A. Leaves manifestly petioled, broadest at or below the middle, shallowly dentate or crenate; puberulence crisped, not glandular; cymes 3–6-flowered; corolla 1.5–2 cm. long, white or pinkish ..... *S. caroliniana*.

A. Leaves subsessile, often broadest above the middle; puberulence not crisped; cymes 1–3-flowered B.

B. Corolla 2 cm. long or less, white to heliotrope; puberulence more or less glandular C.

C. Leaves 1.2–2 cm. long, more or less dentate toward the apex, not revolute-margined and not crowded on the long (mostly 1.5–2.5 dm.) branchlets, usually shorter than the internodes; upper lip of calyx with very short but manifest teeth ..... *S. dentata*.

C. Leaves 5–7 mm. long, entire, strongly revolute-margined, more or less crowded on the short (3–6 cm.) branchlets, often longer than the internodes; upper lip of calyx nearly entire or only obscurely toothed ..... *S. Ashei*.

B. Corolla 3–4 cm. long, scarlet; puberulence not glandular; leaves entire, not revolute-margined or only slightly so in drying ..... *S. coccinea*.

GRAY HERBARIUM.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLV.

COMPOSITAE.

BIDENS (*Continued*).

B. discoidea (T. & G.) Britton. Swamps and wet shores, frequent.

B. Eatoni Fernald. Brackish marshes and margins of Merrimac estuary at Salisbury and Newburyport.

B. Eatoni Fernald, var. **fallax** Fernald. With the species at Salisbury and Newburyport.

B. frondosa L. Wet soil, very common throughout.

B. hyperborea Greene, var. **colpophila** (Fernald & St. John) Fernald. Brackish muddy shore of the Merrimac River at Newburyport (*A. Eaton & M. L. Fernald*, Oct. 2, 1902). Specimen in herb. Gray. See Rhodora xx. 149, 1918.

B. laevis (L.) B S P. Wet soil; not reported from southern towns, but frequent elsewhere.

B. vulgata Greene. Wet places, frequent.

B. vulgata Greene, var. **puberula** (Wiegand) Greene. Roadside, Essex (*C. H. Knowlton*, October, 1909); waste ground, Brighton (*C. A. Weatherby*, Aug. 28, 1918); Boston (*C. H. Knowlton*, Sept. 13, 1906).

BOLTONIA.

B. asteroides (L.) L'Hér. Escaped from cultivation at Danvers. Wakefield, Cambridge, Arlington, Ayer and Scituate.

B. latisquama Gray. Dump near old Codman place, Dorchester (*N. T. Kidder*, Sept. 29, 1917).

BRAUNERIA.

B. pallida (Nutt.) Britton. Near Prince's pickle factory off Great Plain Ave., Needham (*T. O. Fuller*, July 3, 1889). See Rhodora ii. 84–86, 1900.

[*Echinacea purpurea* (DC) Britton is reported from Lowell by Dr. C. W. Swan in Dame & Collins, Fl. Middlesex Co. 51, 1888; it is also reported from Acton by A. W. Hosmer in Rhodora i. 223, 1899; these specimens have not been accessible to the Committee for verification.]

CACALIA.

C. ATRIPLICIFOLIA L. Concord turnpike [Cambridge to Concord] (*C. E. Faxon*, Aug. 31, 1887). Specimen in herb. Gray.

C. SUAVEOLENS L. Newton (*W. G. Farlow*, Sept. 25, 1895). Specimen in herb. Gray.

CENTAUREA.

C. ADULTERINA Moretti. White-flowered form collected at Medford (*Mrs. P. D. Richards*, no date). Specimen in herb. N. E. Botanical Club. Native of southern Europe.

C. CYANUS L. Occasionally escaped from gardens.

C. DIFFUSA Lam. Dry hillside, Norfolk (*Miss R. L. Mann*, July 7, 1902; *J. R. Churchill*, Aug. 28, 1909); open roadside in hard gravel, Plainville (*R. A. Ware*, Aug. 7, 1909). Native of southeastern Europe and Asia Minor.

C. JACEA L. Lexington (*Mrs. P. D. Richards*, no date); Cliftondale, Saugus (*F. S. Collins*, Sept. 30, 1890); field, S. Hanover (*E. A. Josselyn*, June 28, 1905).

C. JACEA L., var. LACERA Koch. Waste places, rare; Bedford (*C. W. Jenks*, Oct. 7, 1906); Sherborn (*Miss M. L. Loomis*, Aug. 15, 1911); Marshfield (*C. H. Morss*, July, 1878).

C. MACULOSA Lam. Woolwaste and also in fields, Westford (*Miss E. F. Fletcher*, June 12, 1903 to July 19, 1914; *C. W. Swan*, Sept. 15, 1884); field recently cultivated, Dover (*F. W. Hunnewell*, Sept. 28, 1919).

C. MELITENSIS L. S. Boston (*C. E. Perkins*, Sept. 27, 1880). Specimen in herb. N. E. Botanical Club.

C. NIGRA L. Fields and waste places; occasional, often abundant.

C. NIGRA L., var. RADIATA DC. Field, Andover (*A. S. Pease*, June, 1900); W. Medford (*Mrs. P. D. Richards*, August, 1890).

C. SOLSTITIALIS L. Waste ground, Lynn (*L. A. Wentworth*, August, 1902). Specimen in herb. Gray.

C. VOCHINENSIS Bernh. Moist soil near river, Amesbury (*C. H. Knowlton*, October, 1904); grassland, Magnolia (*Cora H. Clarke*, Sept. 22, 1911).

CHAENACTIS.

C. GLABRIUSCULA DC. Woolwaste, N. Chelmsford (*W. P. Alcott*, 1878). Specimens in herb. Peabody Acad. Sci. and N. E. Botanical Club. Native in California from Sacramento southward.

CHRYSANTHEMUM.

C. Balsamita L., var. tanacetoides Boiss. Persistent in old gardens, rarely spreading.

C. Leucanthemum L. See Rhodora v. 181, 1903. Lawn weed at N. Easton.

C. Leucanthemum L., var. pinnatifidum Lecoq & Lamotte. Fields and pastures, very common throughout.

C. carinatum Schousb. Roadside, Lynn (*Miss M. E. Ward*, Oct. 11, 1915). Specimen in herb. Gray. Native of Morocco.

C. Parthenium (L.) Bernh. Garden escape at eight stations.

CICHORIUM.

C. Intybus L. Waste places, mostly in heavy soil; abundant in Cambridge since 1783, and in Boston at least since 1814; frequent elsewhere. See J. Robinson, Fl. Essex Co. 68, 1880.

CIRSIUM.

C. altissimum (L.) Spreng. Waste ground near railway, Sherborn (*Miss M. L. Loomis*, Sept. 4, 1914).

C. arvense (L.) Scop. Pastures and waste places, common.

C. canum (L.) Bieb. Kendall Green [Weston] (*Miss K. Parsons*, July 11, 1899). Specimens in herb. Gray.

C. discolor (Muhl.) Spreng. Frequent all along the coast, rarely inland.

C. horridulum Michx. See Rhodora xiii. 238, 1911. Swamps and brackish soil near the sea, from Plum Island to Marshfield, occasional. Introduced inland at Concord according to Rhodora i. 223, 1899. More frequent in southeastern Massachusetts.

C. lanceolatum (L.) Hill. Waste places, common.

C. muticum Michx. Rich moist soil in woods and meadows, occasional.

C. muticum Michx., var. **subpinnatifidum** (Britton) Fernald. Purgatory swamp, Norwood (*C. E. Faxon*, no date). Specimen in herb. Gray.

C. palustre (L.) Scop. Vacant lot, S. Boston (*C. H. Knowlton & W. P. Rich*, July 29, 1908). Lot now covered by wool warehouse.

C. pumilum (Nutt.) Spreng. Dry fields and pastures, common.

CNICUS.

C. benedictus L. Waste heap, Cambridge (*T. Morong & W. Deane*, July 16, 1885). Specimen in herb. W. Deane.

COREOPSIS.

C. LANCEOLATA L. Escaped from garden into dry soil at Hingham (*C. H. Knowlton*, July 4, 1909).

C. rosea Nutt. Wet shores of ponds; Woburn, Winchester, Medford, Sudbury, Natick, Framingham, Norfolk. Especially abundant at Winter Pond, Winchester.

C. TINCTORIA Nutt. Roadside, Andover (*F. L. Mason & F. W. Grigg*, Sept. 30, 1911); cornfield, Wenham (*Walter Kemble*, July 12, 1877); waste ground, Sherborn (*Miss M. L. Loomis*, July 12, 1913).

C. TRIPTERIS L. Vacant lots, made land, Back Bay, Boston (*E. F. Williams*, Sept. 3, 1903). Specimen in herb. Gray.

COSMOS.

C. BIPINNATUS Cav. Dorchester, dump off Granite Ave. (*N. T. Kidder*, Oct. 7, 1919).

COTULA.

C. CORONOPIFOLIA L. Ballast, Chelsea (*H. A. Young*, Sept. 11, 1879); salt marsh, Chelsea (*C. E. Perkins*, August, 1880). Specimens in herb. Gray, N. E. Botanical Club and W. Deane.

CREPIS.

C. CAPILLARIS (L.) Wallr. Weed in lawns; Medford, Brighton, Wellesley, Milton, Franklin.

C. FOETIDA L. Woolen mill yard, Graniteville, Westford (*C. W. Swan*, Aug. 22, 1883). Native in Great Britain, central and southern Europe, southwestern Asia and northern Africa. Specimen in herb. N. E. Botanical Club.

C. TECTORUM L. Edge of sidewalk, Medford (*L. L. Dame*, August, 1898). Specimen in herb. N. E. Botanical Club.

C. VULGARIS Cass. S. Boston flats (*C. E. Perkins*, Aug. 22, 1879). Specimen in herb. N. E. Botanical Club. Native of the Mediterranean region.

DYSSODIA.

D. TENUILOBA (DC.) Robinson. S. Boston (*C. E. Perkins*, July 20, 1883). Specimen in herb. N. E. Botanical Club. A waif from southern Texas, along and near the Rio Grande.

ECHINOPS.

E. SPHAEROCEPHALUS L. Rubbish heap, Cambridge (*W. Deane*, Aug. 5, 1886); escaped from Fenway into vacant lots, Boston (*E. F. Williams*, Aug. 12, 1903 et seq.).

ECLIPTA.

E. ALBA (L.) Haussk. S. Boston flats (*C. E. Perkins*, Oct. 3, 1879). Specimens in herb. N. E. Botanical Club and N. T. Kidder.

ERECHTITES.

E. hieracifolia (L.) Raf. Meadows and borders of salt marshes, somewhat local. See RHODORA xix. 25–27, 1917, for the discussion of the following varieties.

E. hieracifolia (L.) Raf., var. **intermedia** Fernald. Open ground and waste places, frequent throughout.

E. hieracifolia (L.) Raf., var. **praealta** Fernald. Vide supra. Twelve scattered stations, the northwestern section not represented.

ERIGERON.

E. annuus (L.) Pers. Fields and roadsides, common throughout.

E. canadensis L. Fields, gardens and waste places, very common throughout.

E. philadelphicus L. Moist open woods, rare; Andover, N. Andover, Reading, N. Reading, Groton, Malden, Stony Brook Reservation, Milton: Hingham, according to T. T. Bouvé, in Flora of Hingham, 110, 1893.

E. pulchellus Michx. Fields and meadows, common throughout.

E. pusillus Nutt. See RHODORA xv. 205–209, 1913. Dry bank, Methuen (*F. W. Grigg*, Aug. 17, 1920); dunes, Plum Island, Ipswich (*F. W. Grigg*, Sept. 15, 1912); by bridge over Beaver Brook, Littleton (*J. P. Bill & F. W. Grigg*, Sept. 2, 1922); sandy soil, Pembroke (*M. L. Fernald*, Oct. 29, 1916); gravelly beach, Green Harbor, Marshfield (*C. H. Knowlton*, Aug. 25, 1923).

E. ramosus (Walt.) B S P. Dry fields and waste places, common throughout.

E. ramosus (Walt.) B S P., var. **discoideus** (Robbins) B S P. Occasional; specimens reported from Lexington, Ashland, Dover, Stoughton, Marshfield.

E. ramosus (Walt.) B S P., var. **septentrionalis** Fernald & Wiegand. Rhodora xv. 59–61, 1913. Cambridge (*F. S. Collins*, June 23, 1914); near Fresh Pond, Cambridge (*W. Deane*, June 25, 1882); Concord (*Horace Mann*, June, 1862).

EUPATORIUM.

E. aromaticum L. Dry open woods, rare; apparently frequent in Stony Brook and Blue Hill Reservations.

E. falcatum Michx. Rhodora xxii. 57–70, 157–165, 1920. Rich woods, rare; Ipswich, Revere, Middlesex Fells, W. Roxbury, Stony Brook Reservation, Readville, Blue Hill Reservation, Holliston, Marshfield.

E. perfoliatum L. Grassy swamps, common throughout.

E. perfoliatum L., forma **purpureum** Britton. Bull. Torr. Bot. Club xvii. 129, 1890. Three or four plants, near shores of Merrimac River a few miles below Haverhill (*Miss M. Blatchford*, Sept. 29, 1894); sandy margin of Winter Pond, Winchester (*C. A. Weatherby & M. L. Fernald*, Sept. 19, 1908.)

E. perfoliatum L., var. **truncatum** Gray. Beaver Brook, Dracut (*C. W. Swan*, Sept. 7, 1884); shore of Sandy Pond, Lincoln (*F. W. Grigg*, Sept. 17, 1913); by Baddacook Pond, Groton (*J. P. Bill & F. W. Grigg*, Sept. 2, 1921); S. Framingham (*Dr. E. L. Sturtevant*, Sept. 11, 1890). Specimens in herb. N. E. Botanical Club.

E. pubescens Muhl. Open woods and sandy soil, frequent, especially southward.

E. purpureum L. Rhodora xxii. 57–70, 157–165, 1920. Open woods and swamps, rare; Concord, Hopkinton, Stony Brook Reservation, Milton, Norfolk, Randolph.

E. rotundifolium L. Dry sandy soil. Georgetown (*Mrs. C. N. S. Horner*, no date); Saugus (*C. E. Faxon*, Aug. 18, 1879; *H. A. Purdie*, Oct. 7, 1902).

E. sessilifolium L. Dry rocky soil, occasional; rare in Essex and Plymouth Counties.

E. urticaefolium Reichard. Rich moist soil, usually in shade; occasional north and west of Boston, not reported south.

E. verbenaefolium Michx. Low ground, especially in mucky soil; rare in Essex and Middlesex Counties, frequent southward.

E. verticillatum Lam. Rhodora xxii. 57–70, 157–165, 1920. Swamps, meadows and wet woods, very common throughout.

FILAGO.

F. MINIMA Fries. Weed in cultivated ground, Reading (*W. H. Manning*, September, 1891). Specimen in herb. Gray. Adventive from Europe.

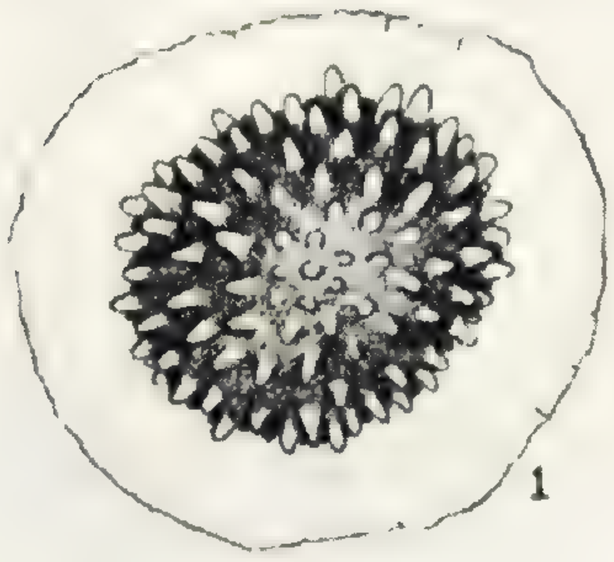
C. H. KNOWLTON
WALTER DEANE
} *Committee on Local Flora*

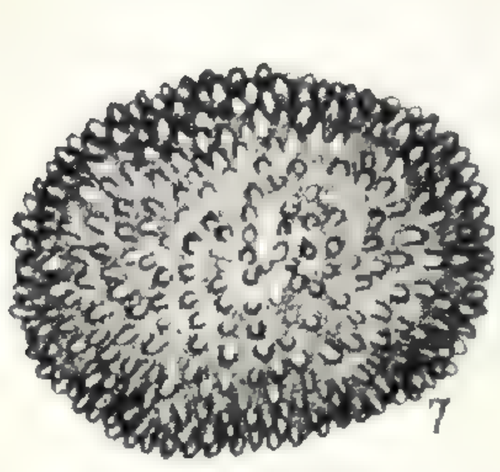
HIBISCUS OCULIROSEUS IN RHODE ISLAND.—The discovery of what appears to be *Hibiscus oculiroseus* Britton in a brackish swamp at Narragansett Pier, Rhode Island, may be an extension of range worth recording. On Aug. 19, 1917, the writer found several plants of this species sprinkled among hundreds of native Swamp Rose Mallow (*Hibiscus Moscheutos* L.), their *white petals* with *crimson bases* in striking contrast to the pink petals of the latter. Except for this color distinction the general appearance of the two species is similar, although there is a technical difference in the shape of the capsules and calyx lobes.

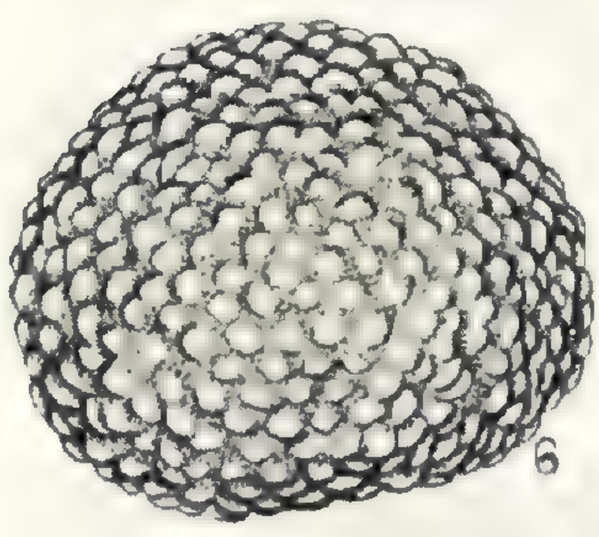
Manuals and local floras give the range of this species as S.E. New York, New Jersey and southward, and as far as the writer knows *Hibiscus oculiroseus* has not been reported from New England. There is no reason to believe that the plants were purposely introduced by man. At any rate *Hibiscus* is a sturdy genus, some species adapting themselves to fresh and brackish marshes as well as to the drier soil of gardens, and it is probable that these plants will continue to exist at this station, unless the entire swamp is destroyed by threatened dredging operations for the improvement of the neighborhood.

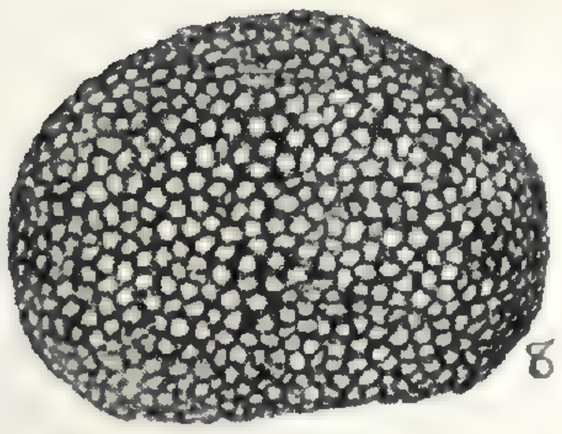
Specimen filed at the herbarium of the New England Botanical Club.—S. N. F. SANFORD, Boston, Mass.

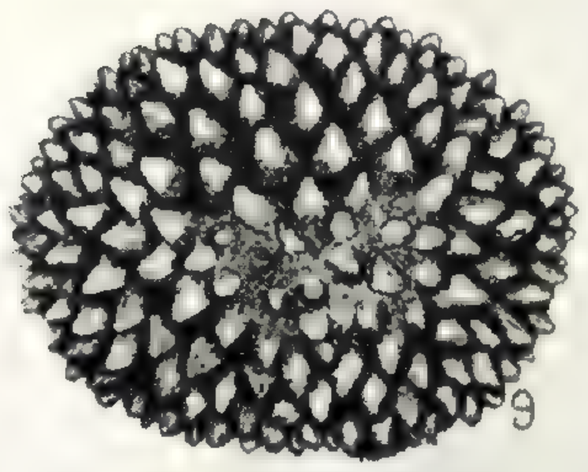
Vol. 26, no. 303, including pages 41 to 60 and portrait plate, was issued 24 April, 1924.











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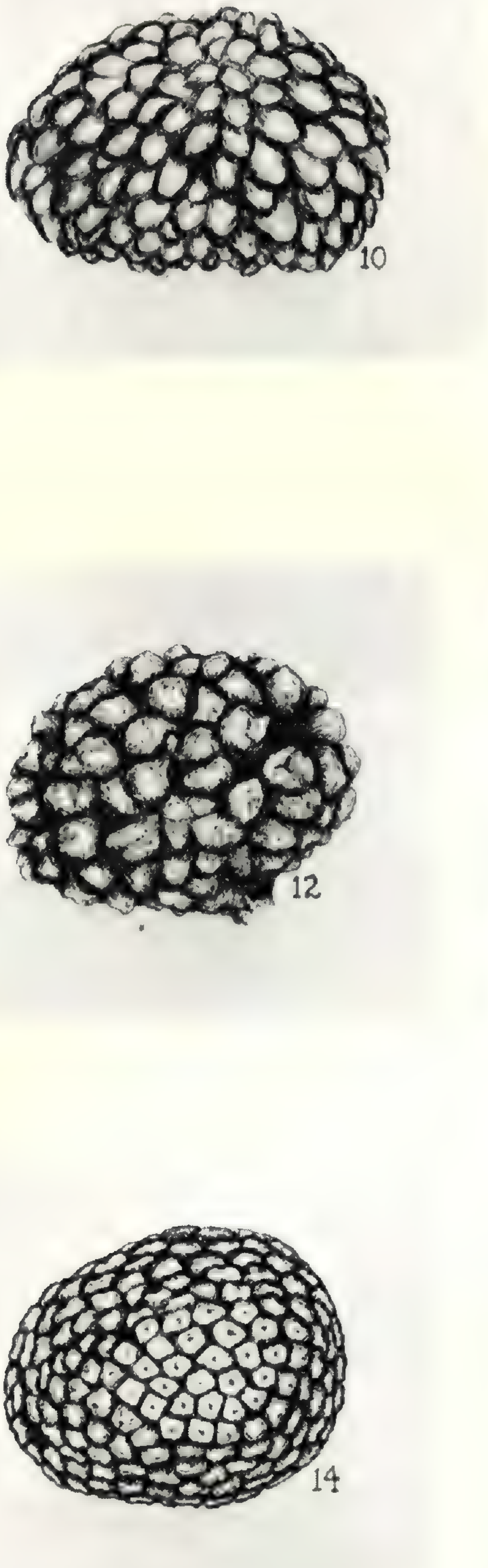

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NUTLETS OF SCUTELLARIA.

Harlow Bot. Lab.

RHODORA

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Rhodora

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CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY.—New Series.—No. LXXII.

M. L. Fernald.

I. POLYSTICHUM MOHRIOIDES AND SOME OTHER SUBANTARCTIC OR ANDEAN PLANTS IN THE NORTHERN HEMISPHERE.

Polystichum mohrioides (Bory) Presl, var. **scopulinum** (D. C. Eaton), n. comb. *Aspidium aculeatum*, var. *scopulinum* D. C. Eaton, Ferns of N. A. ii. 125, t. lxii. fig. 8 (1880). *P. scopulinum* (D. C. Eaton) Maxon, Fern Bull. viii. 29 (1900). *P. aculeatum scopulinum* (D. C. Eaton) Gilbert, List N. A. Pterid. 20 (1901). *P. Lonchitis*, var. *scopulinum* (D. C. Eaton) Jones, Bull. Univ. Mont., Biol. Ser. xv. 7 (1910).

After several times collecting and studying during a period of nearly twenty years this anomalous plant, which has been treated as a variety of *Polystichum aculeatum* or of *P. Lonchitis*, as *P. mohrioides* and as a distinct species standing midway between *P. aculeatum* and *P. mohrioides*, I find myself firmly convinced that its relationship is primarily with the latter plant and that it is at best a northern variety of that wide-ranging austral species. *P. mohrioides* was discovered on the Falkland Islands (les Malouines) by D'Urville & Lesson during the voyage around the world of the French corvette, La Coquille. It was described by Bory de St.-Vincent as *Aspidium Mohrioides* and beautifully illustrated.[1] Gradually our knowledge of the plant has been extended and *P. mohrioides* in one form or another has been found to have a wide and very distinctive range, one which, with some modifications, is duplicated in several other groups of plants.

[1] Bory in Duperrey, Voyage autour du Monde sur La Coquille, Bot. pt. 1: 267, t. 35, fig. 1 (1829).

West of the Falkland Islands it is found on Tierra del Fuego, whence it follows slightly northward on the high Andes as *P. mohrioides*, var. *plicatum* (Poeppig) Christensen[1] or *P. andinum* Phil., which differs from the Falkland plant only in its dwarf size (growing in exposed alpine habitats) and in the paler and thinner scales of the stipe. Skottsberg got a form of *P. mohrioides* on South Georgia, 800 miles (1290 km.) southeast of the Falklands; Moseley, during the voyage of the Challenger, collected an extreme form on Marion Island, 1200 miles (1930 km.) southeast of the Cape of Good Hope and more than 3000 miles (4800 km.) northeast of South Georgia; and the next year De l'Isle discovered the species on Amsterdam Island, more than 2000 miles (3200 km.) east of Marion Island. Northward, in the Andes, it occurs as *P. mohrioides*, var. *elegans* (Remy) Christensen[2] or *P. elegans* Remy, an extreme with longer and more divided pinnae.

In North America two members of this alliance are recognized: *P. Lemmoni* Underwood and *P. scopulinum* (D. C. Eaton) Maxon, both confined to arid regions of the Sierra Nevada-Cascade axis, with the exception of four isolated stations for the latter, one each in the Teton Mts. of Idaho, the Mission Mts. of Montana, the Wasatch Mts. of Utah and the Shickshock Mts. of Gaspé Co., Quebec. So close are these North American plants to those of the southern Andes and the Falklands that the late D. C. Eaton, after trying to find specific differences, described and illustrated[3] as typical *P. mohrioides* (or *Aspidium mohrioides*) the Californian *P. Lemmoni* and at the same time, in describing his *Aspidium aculeatum*, var. *scopulinum*, he surmised that it belonged with *P. mohrioides*, saying: "I have some doubt about the plant here named var. *scopulinum*, as it differs more from all the rest than any of them do from each other. It has a little the habit of *A. mohrioides*, but, though the specimens I have seen are old, they still keep in a degree the aculeate points of the present species."[4] And again he wrote that his var. *scopulinum* was "almost as much like *A. mohrioides* as it is like *A. aculeatum*, but as it has the lobes of the pinnae somewhat aculeate it is better to leave it with the latter species."[5] As already stated, Eaton had tried to find specific characters for *P. Lemmoni* but was unable to do

[1] Christensen, Arkiv för Bot. x. No. 2: 17 (1910).
[2] Christensen, l. c. (1910).
[3] Eaton, Ferns of N. A. ii. 251, t. lxxx. figs. 4–9 (1880).
[4] Eaton, l. c. 127, 128.
[5] Eaton, l c. 254.

so, saying clearly of the Lemmon plant: "At first I believed it to be a distinct species."[1] Similarly the great Swiss specialist upon the ferns, Christ,[2] in monographing *Polystichum* § *Mohrioides* had no hesitation in treating *P. Lemmoni* as identical with *P. mohrioides* (which, as understood by him, was chiefly var. *elegans*).

In his discussion of the ferns of temperate South America collected by Skottsberg, Christensen[3] points out the important characters which separate *P. mohrioides* from *P. aculeatum* and its allies; namely, the fleshy texture, scaleless surfaces of the fronds, thick and flat ribs and the large and immersed stomata (so immersed that under a good lens the lower surfaces of the fronds appear pitted or punctate). The fleshy texture, flat ribs and punctate lower surfaces are all obvious enough in *P. scopulinum*, and the fronds are either with or without some scales on the lower surface, but this latter character is inconstant, some sheets of perfectly good *P. mohrioides*, var. *typicum* Christensen from the Falkland Islands (coll. *Cunningham*, January 21, 1868) before me showing numerous slender scales among the sori. The Cunningham specimens are quite like the original plate of *Aspidium mohrioides* and in outline, size, texture and punctation they are so close to several North American specimens of *P. scopulinum* that only the keenest inspection reveals slight differences. Thus Parish's material from Snow Canyon, San Bernardino Co., California, is a very close match in all these characters for the Cunningham plant and for the original plate. All the Falkland material I have seen, however, has the basal scales of the stipe darker and firmer than in *P. scopulinum*, although the Fuegian specimens (var. *plicatum*) have them as pale and thin.

P. scopulinum is regularly defined as differing from *P. mohrioides* and *P. Lemmoni* in the sharper and more acicular tips of the upper lobes or teeth of the pinnae. In general this character holds, but in the Cunningham material from the type-region of *P. mohrioides* the teeth of the lower pinnae are quite as sharp as in some of the North American plants, while in the Parish material above cited only the lowest pinnae show the sharp teeth, the upper having them quite as blunt as in the most ideal *P. mohrioides* or in *P. Lemmoni*. Furthermore the plant of Marion Island has some of the pinnae quite as spinulose-toothed as in the most extreme *P. scopulinum*.

[1] Eaton, l. c. 128.

[2] Christ, *Ueber die australen Polystichum-Arten*. Arkiv för Bot. iv. No. 12: 1–3 (1905).

[3] Christensen, l. c 18.

Reference has been made to the fact that neither D. C. Eaton nor Dr. Christ could distinguish *P. Lemmoni* from *P. mohrioides*, var. *elegans*. Well developed fronds of the two are almost identical and *P. Lemmoni* has the scaleless surfaces of theoretical *P. mohrioides*, and the pits in its lower faces are unusually conspicuous. In only one character, apparently, can the two be distinguished with satisfaction: in var. *elegans* the scales at the base of the stipe are castaneous and subcoriaceous as in typical *P. mohrioides;* in *P. Lemmoni* paler and thinner as in vars. *plicatum* and *scopulinum*. In their extremes *P. Lemmoni* and *P. mohrioides*, var. *scopulinum* are well differentiated, but certain small plants of the former too closely simulate plants of the latter with unusually pinnatifid pinnae; and in view of their both possessing the essential characters of *P. mohrioides* and the failure of the spinulose teeth of var. *scopulinum* to retain the constancy one might wish them to, it seems the part of sound classification to treat *P. Lemmoni* as

P. MOHRIOIDES, var. **Lemmoni** (Underw.), n. comb. *Aspidium mohrioides* D. C. Eaton, Ferns of N. A. ii. 251, t. lxxx. figs. 4–9 (1880), as to Lemmon plant figured. *P. Lemmoni* Underw. Our Nat. Ferns, ed. 6: 116 (1900).

Besides agreeing in all their fundamental specific characters, typical *P. mohrioides* and its vars. *scopulinum* and *Lemmoni* are amazingly similar in their selection of habitat. Bory's statement, based upon the observations of the original collectors of the Falkland plant, was that "elle croît dans les fentes des rochers" and the latest statement, by Skottsberg, is similar: "Rocky places, often deep down in crevices," while in the "stone-runs" "Two ferns are found in solitary tufts between the blocks, *Blechnum magellanicum* and *Polystichum mohrioides*, both finely developed."[1] How strikingly like Eaton's account of the type-station of var. *Lemmoni:* "Mr. Lemmon writes that this fern grows in loose and moist granitic soil, the root-stocks hidden under rocks;"[2] or like Bradley's account of the type-region of var. *scopulinum* in the Teton Canon of Idaho: "we climbed a sharp slope of stumbling rubbish, and then found ourselves on a narrow crest, overlooking an immense cañon, the Great Téton Canon . . . . The descent from this crest is very steep; and, in dodging falling masses of rock, started by those behind him, Mr. Bechler unfortunately

[1] Skottsberg, *A Botanical Survey of the Falkland Islands*, Kungl. Svenska Vetenskapsakad. Handl. 1. No. 3: 9, 114 (1913).

[2] Eaton, l. c. 252 (1880).

got a severe sprain."[1] At the isolated stations at the head of Snow Brook and on the ragged walls of Devil's Gulch on Mt. Albert, Quebec, where I have several times collected the plant, var. *scopulinum* is in dry rock-crevices (serpentine) or under broken rock whence its tough roots are most difficult of extraction. In the latter situations, where the tallest and least plicate fronds naturally develop, the fronds are often badly broken by the shifting rock-debris.

The range of the aggregate-species, *Polystichum mohrioides*, is, as already stated, similar to the ranges of several other plants, although differing, naturally, in many details. Thus *Myriophyllum elatinoides* Gaudichaud occurs on New Zealand, Chatham Island, Tasmania, the Falkland Islands, in the Andean region from Cape Horn to Ecuador, locally in Mexico, and it is known in the western United States in Arizona and Oregon.[2] *Empetrum rubrum* Vahl, characterized by white-woolly branchlets, leaves not reflexed in age and red drupes, occurs on the Falklands, along the Andes from Tierra del Fuego into Chile, on Masafuera (the western island of the Juan Fernandez group), and 2500 miles (4025 km.) east of Patagonia on Gough Island and on the islands of the Tristan da Cunha group. Outside the Subantarctic and southern Andean regions the only Empetrums are the Arctic circumpolar *E. nigrum* L. with branchlets at most minutely puberulent, the leaves reflexed in age and the berries black or purplish; and two species centering on the Gulf of St. Lawrence, *E. Eamesii* Fernald & Wiegand and *E. atropurpureum* Fernald & Wiegand, both of which have the white-woolly branchlets, non-reflexed leaves and red berries as in the Subantarctic *E. rubrum* but differ from it in more trailing habit and in seed-characters.[3]

The quaint little genus *Lilaeopsis* of the *Umbelliferae* has three strongly marked species or groups of species. One, *L. lineata* (Michx.) Greene,[4] with the linear-clavate broadly round-tipped 3–6-jointed leaves scattered and solitary along the creeping filiform stem and

[1] Bradley in Hayden, U. S. Geol. Surv. of Terr. 6 Ann. Rep. 219 (1873).

[2] See Fernald, Rhodora, xxi. 124 (1919).

[3] For further discussion, see Fernald & Wiegand, Rhodora, xv. 213–217 (1913).

[4] It is probable that, when the original plant of *Hydrocotyle chinensis* L. Sp. Pl. i. 234 (1753) is critically examined, it will prove to be *Lilaeopsis lineata*, in which case we shall have to take up for the characteristic plant of Atlantic North America the highly inappropriate name *L. chinensis* (L.) Kuntze. The Linnean description strongly suggests *L. lineata*, although the phrase "Folia . . . *saepius bina ad articulos*" is not very satisfactory. No *Lilaeopsis* is known from Asia and Linnaeus evidently had his geographic data confused. His *Hydrocotyle chinensis* has generally been referred to the all-inclusive *L. lineata* (or *Crantzia lineata*), but it is worthy of note that upon examining the Linnean type Asa Gray made the memorandum "a species of *Crantzia*," not our species, with which he was familiar.

without obvious stipular margins, and with the fruits constricted at base or pyriform, is confined to saline mud of the Atlantic coast of the United States and of southwestern Nova Scotia. The second species *L. carolinensis* Coult. & Rose, a plant with long-petioled leaves having spatulate or oblong blades up to 2.5 cm. long and 1.5 cm. broad and comparatively large globose fruits, was originally described from the southeastern United States but it is apparently found also in Paraguay (for example, *Hassler*, no. 12,271) and elsewhere in temperate eastern South America.

The third and most widely spread group of species is typified by *L. attenuata* (Hook. & Arn.) Fernald,[1] a plant characteristic of southern South America and the Andes and represented northward by *L. occidentalis* Coult. & Rose and *L. Schaffneriana* (Schlecht.) Coult. & Rose and southward by the plants of the Falkland Islands, New Zealand, Tasmania and Australia which have erroneously passed as the Atlantic North American *L. lineata* or *Crantzia lineata* (Michx.) Nutt. The published illustrations[2] of fruits indicate considerable differences and it is possible that the austral series contains other species than *L. attenuata* and *L. Schaffneriana* but without better material than is now at hand it would be unwise to attempt further subdivision. The essential point in regard to the Australian, New Zealand, Tasmanian, Falkland, Argentine and Andean plants is, that they as well as the Mexican and Pacific North American plants all differ in fundamental characters from the Atlantic North American *L. lineata;* for in them all the more elongate and slender or often attenuate leaves are tufted along the comparatively stout creeping stem, not solitary and scattered as in *L. lineata;* when well developed they show 6–13 joints instead of only 3–6 (rarely 7) and they often have scarious stipular margins which frequently persist as old shreds. Whether they finally prove to be a single species, *L. attenuata*, or several, the plants of Subantarctic regions and of temperate and Andean South America constitute, with the Mexican and Pacific North American plants, a distinct section of *Lilaeopsis*.

It is thus evident that, although differing in details of distribution, *Polystichum mohrioides, Myriophyllum elatinoides*, the red-berried Empetrums and the species of *Lilaeopsis* centering about *L. attenuata*

[1] Lilaeopsis **attenuata** (Hook. & Arn.), n. comb. *Crantzia attenuata* Hook. & Arn in Hook. Bot. Misc. iii. 346 (1833).

[2] Hook. Fl. Antarct. ii. 287, t. C. (1847); Weddell, Chloris Andina, ii. t. 68 (1861); Coult. & Rose, Bot. Gaz. xxiv. 48, 49, figs. and 4 (1897); Jepson, Madroño, i. 139, fig. 25 (1923).

are similar in having interrupted Subantarctic and Andean ranges and in occurring in the northern hemisphere only in western America or in the region of the Gulf of St. Lawrence or in both areas.

II. THE DWARF ANTENNARIAS OF NORTHEASTERN AMERICA.

(Plate 142.)

The larger species of *Antennaria* of temperate eastern America are reasonably understood, but there is another series of highly localized species, chiefly of the calcareous areas from northern Labrador to Newfoundland, eastern Quebec and the James Bay region, which have not been so clearly defined. These are the plants which have passed chiefly as *A. alpina* (L.) Gaertn. and which, with it, form a rather natural group of species. In the cordilleran region of North America these plants have attracted much attention and a large number have been proposed as species. In eastern America they occur wholly beyond the habitations of resident botanists, unless we include in eastern America botanically quite similar Greenland. The Antennarias of Greenland have been carefully treated and beautifully illustrated by Porsild;[1] but in the region immediately to the west and southwest of Greenland these plants are collected only by the chance botanical visitor and our knowledge of them, like our knowledge of the whole vast region from Gaspé and Newfoundland northward, is in very rudimentary condition. However, the necessity of properly identifying two quite distinct species discovered in 1923 on the Shickshock Mountains makes it desirable to draw into convenient form our knowledge to date of these plants. The following synopsis of the species occurring south of Hudson Straits is therefore presented, not because it is final but because it may draw attention to a group about which much more information is needed. Further exploration of Newfoundland, Anticosti Island, the Gaspé Peninsula and the Labrador Peninsula will surely bring to light many additional species; and, to judge from our experience to date, they may be most hopefully looked for on barrens and mountains of limestone, basic schists and traps.

[1] Porsild, *On the Genus Antennaria in Greenland* (Arbejder fra den Danske Arktiske Station paa Disko, Nr. 9), Meddel. om Groenl. li. 267–281 (1915).

In order properly to orient the small-leaved boreal series here specially considered, the leading features of the other sections of the genus represented in eastern America are indicated in the key.

a. Basal leaves[1] erect, oblanceolate to elliptic-acuminate, 2–16 cm. long, similar to the cauline ones: involucres of the pistillate heads brown to blackish: plants sparingly to not at all stoloniferous.

A. eucosma Fernald & Wiegand and *A. pulcherrima* (Hook.) Greene.

a. Basal leaves spreading, forming depressed rosettes, strongly contrasting in outline with the cauline leaves: plants humifuse or freely stoloniferous *b.*

b. Larger basal leaves only 1.5–5 mm. wide, blunt or barely short-mucronate *c.*

c. All the involucral bracts of the pistillate heads[2] deep-brown, drab or blackish *d.*

d. Bracts subequal, narrow; the inner linear or lanceolate and acute: heads 1–6 *e.*

e. Rosette-leaves terminated by a short but distinct glabrous mucro: corollas 3.5–5 mm. long *f.*

f. Rosette-leaves glabrous and bright-green or grayish-pubescent above: cauline leaves distant; the upper with an oblong glabrous scarious appendage: corollas 4–5 mm. long: pits of the denuded receptacle 20–30, 0.3–0.4 mm. broad, much broader than the intermediate ridges....1. *A. alpina.*

f. Rosette-leaves canescent: cauline leaves crowded; the upper with a lanceolate pubescent scarious appendage: corollas 3.5–4 mm. long: pits of denuded receptacle 60–100, 0.1 mm. broad, about as wide as the blunt-edged intermediate ridges.....2. *A. Sornborgeri.*

e. Rosette-leaves canescent, blunt, the terminal mucro obsolete or in old weather-worn leaves barely visible: corollas 3–4 mm. long *g.*

g. Cauline leaves 9–15; the median and upper tapering to a slender subulate tip; only the very uppermost with a lanceolate scarious appendage..3. *A. cana.*

g. Cauline leaves 5–8; all but the lowermost with an oblong-lanceolate flat scarious tip 1.5–3 mm. long.....4. *A. vexillifera.*

d. Bracts in about 5 outwardly shorter series, oblong, obtuse: head solitary.....5. *A. pygmaea.*

c. At least the inner bracts of the pistillate heads with white or whitish tips: basal leaves whitened above with minute pubescence *h.*

h. The 1–3 uppermost cauline leaves with slender scarious terminal appendages: rosette-leaves blunt or short-mucronate: pistillate involucres 4–7 mm. high, with appressed-ascending bracts *i.*

i. Involucre of 4–6 series of distinctly unequal pale-brown bracts.....6. *A. straminea.*

[1] By basal leaves are meant not only those of the basal rosette but the new broad leaves terminating the stolons or basal offshoots. On account of weathering the former are often bruised and uncharacteristic.

[2] The only species of this series of which staminate plants are known is *A. nitida.* The descriptions of all the others, therefore, are drawn only from pistillate plants.

i. Involucre of 2–3 (–4) series of subequal or obscurely imbricated whitish, creamy or roseate bracts *j.*
j. Indument of the rosette-leaves close and lustrous as if varnished: cauline leaves 9–18: inflorescence glomerulate: corollas 3–3.5 mm. long *k.*
k. Upper cauline leaves with scarious tips 2–2.5 mm. long: involucre not viscid, with thin bracts; the thin tips of the inner series lacerate-erose.....7. *A. albicans.*
k. All but the uppermost cauline leaf merely short-mucronate: involucre viscid-hirsute, with thick and firm bracts; the thick tips entire or merely crenulate.....8. *A. nitida.*
j. Indument of the rosette-leaves a loose tomentum: cauline leaves 5–10: inflorescence a corymb: corollas 3.8–5 mm. long *l.*
l. Flowering stems 3–7 cm. high, not glandular: the upper cauline leaves with oblong-lanceolate scarious appendages 2–3 mm. long: heads 2–5: involucre not glandular: achenes smooth..9. *A. Peasei.*
l. Flowering stems 0.5–1.5 dm. high, glandular-hirsute above: upper cauline leaves with subulate or involute tips: heads 3–9: involucre glandular-viscid: achenes papillose..10. *A. subviscosa.*
h. The 5–8 upper cauline leaves with broad flat scarious appendages: rosette-leaves mucronate: involucre (except for the whitish tips) fuscous, 6–8 mm. high, its bracts loosely spreading.....11. *A. isolepis.*
b. Larger basal leaves mostly wider (rarely less than 5 mm. wide), distinctly mucronate or apiculate *m.*
m. Rosette-leaves comparatively small, 0.2–2.1 cm. wide, with only the midrib prominent to the tip beneath, the lateral ribs short and evanescent *n.*
n. Middle and upper cauline leaves terminated by a flat or merely involute scarious appendage....*A. neglecta* Greene, *A. appendiculata* Fernald, *A. spathulata* Fernald, *A. canadensis* Greene.
n. Middle and upper cauline leaves subulate-tipped or mucronate, without a scarious appendage (except sometimes on the bracteal leaves of the inflorescence).....*A. petaloidea* Fernald, *A. glabrifolia* Fernald, *A. neodioica* Greene.
m. Rosette-leaves comparatively large, 0.7–5.5 cm. broad, with 3–7 somewhat prominent ribs beneath ..*A. plantaginifolia* (L.) Richardson, *A. occidentalis* Greene, *A. fallax* Greene, *A. Brainerdii* Fernald, *A. Parlinii* Fernald, *A. solitaria* Rydberg.

1. A. ALPINA (L.) Gaertn. FIG. 1. Humifuse, with trailing subligneous branches up to 1 dm. long: stolons short and crowded: *rosette-leaves* oblanceolate, *0.8–1.8 cm. long,* 1.5–4 mm. wide, *narrowed to a distinct subulate-mucronate tip,* bright green or canescent above: flowering stem slender, subflexuous, up to 2.3 dm. high: *cauline leaves* 4–13, becoming distant by elongation of the stem; *the middle and upper with oblong glabrous scarious tips:* pistillate heads 1–5, sessile or short-stalked: involucre 7–9 mm. high, lanate at base: bracts about 3-seriate, subequal; the outer lanceolate to oblong, fuscous, acuminate; the inner attenuate: *corollas 4–5 mm. long:* longer pappus-bristles 5–6 mm. long: achenes glabrous, 1.3–1.5 mm. long: *pits of*

the denuded receptacle 20–30, 0.3–0.4 mm. broad, much broader than the intermediate ridges.

Three varieties with us:

Flowering stems 2–12 cm. high, with 4–9 leaves: heads (when more than 1) in a close corymb or glomerule.
Rosette-leaves green and glabrous above.....Var. *typica.*
Rosette-leaves canescent-tomentose above.....Var. *canescens.*
Flowering stems elongating to 2–2.3 dm., with 9–13 leaves: rosette-leaves green and glabrous above: heads 1–2, the lower (when present) on a pedicel 1–1.5 cm. long .....Var. *ungavensis.*

Var. **typica.** *Gnaphalium alpinum* L. Sp. Pl. ii. 856 (1753). *A. alpina* (L.) Gaertn. Fruct. ii. 410 (1791).—Arctic America, south to Kangalaksiorvik Bay, Labrador (*Owen Bryant*) and mountains of British Columbia; also northern Eurasia. *Fl.* July–September.

Var. CANESCENS Lange, Fl. Dan. xvi. (fasc. xlvii.) 9, t. 2786, fig. 1 (1869); Fernald, RHODORA, xviii. 237 (1916). *A. angustata* Greene, Pittonia, iii. 284 (1898). Var. *cana* Fernald & Wiegand, RHODORA, xiii. 24 (1911), in part.—The commoner extreme in eastern America, extending south to Port Manvers, Labrador (*Delabarre*).

Var. UNGAVENSIS Fernald, RHODORA, xviii. 238 (1916).—Known only from the type-region, Stillwater River, Ungava District.

2. A. SORNBORGERI Fernald. FIG. 2. Humifuse, with trailing subligneous branches up to 1 dm. long: stolons very short and crowded: rosette-leaves oblanceolate, 6–12 mm. long, 1.5–2 mm. wide, narrowed at summit to the short-mucronate tip, canescent-pannose: *flowering stem stiffly erect,* 0.4–1.1 dm. high: *cauline leaves rather crowded,* 9–12, linear, 5–15 mm. long, 0.5–1.5 mm. wide; the *upper with villous lanceolate scarious tips:* pistillate heads 1–3, sessile, campanulate: involucre 6–7 cm. high, lanate at base: bracts about 3-seriate, subequal; the outer lanceolate, brown; the inner linear-attenuate, yellowish-brown, erose-serrulate: *corollas 3.5–4 mm. long:* longer pappus-bristles 4–5.5 mm. long: achenes glabrous, 1.2–1.4 mm. long: *pits of the denuded receptacle 60–100, 0.1 mm. broad, about as wide as the blunt-edged intermediate ridges.*—RHODORA, xviii. 237 (1916).—Rama, LABRADOR (*J. D. Sornborger*). *Fl.* August.

3. A. CANA (Fernald & Wiegand) Fernald. FIG. 3. Humifuse, the crowded leafy stolons very short (up to 2 cm. long): rosette-leaves narrowly cuneate-obovate or broadly oblanceolate, obtuse, not mucronate, broad-based, 3–11 mm. long, 2–5 mm. broad, white above with dense minute tomentum: flowering stems 2.5–12 cm. high, slender: *cauline leaves 9–15,* rather crowded, linear; the lower 8–15 mm. long, 1–2 mm. broad, subulate-tipped; *the median and upper subulate-tipped; only the uppermost with a lanceolate scarious tip:* pistillate heads (1–)2–6, campanulate, corymbose, on pedicels up to 1 cm. long: involucres 5–7 mm. high, lanate at base: bracts 3-seriate, subequal, very thin; the outer oblong, brown; the inner lanceolate, tawny, slightly fimbriate: *corollas 3.5–4 mm. long:* longest pappus

4–5.5 mm. long: achenes glabrous, 1.2–1.6 mm. long: *pits of the mature denuded receptacle 60–100, 0.1 mm. broad, much broader than the acute intermediate ridges.*—RHODORA, xviii. 236 (1916). *A. alpina*, var. *cana* Fernald & Wiegand, RHODORA, xiii. 24 (1911), in part.—Dry limestone barrens, western NEWFOUNDLAND. *Fl.* July, early August.

4. A. **vexillifera**, spec. nov. (FIG. 4), humifusa, stolonibus foliosis confertis perbrevibus (ad 2 cm. longis); foliis basalaribus late spathulatis vel cuneato-obovatis apice rotundatis vix mucronatis 5–12 mm. longis 3–4 mm. latis supra albidis, tomento denso minuto; caule florifero 6–10 cm. alto gracili; foliis caulinis 5–8 subdistantibus, imis oblanceolatis, mediis superioribusque linearibus 5–10 mm. longis cum apice scarioso oblongo-lanceolato 1.5–3 mm. longo munitis; capitulis femineis 1–5 corymbosis hemisphaerico-campanulatis basi rotundatis; involucro 6–7 mm. alto basi lanato; bracteis 2–3-seriatis subaequalibus tenuissimis, exterioribus anguste oblongis obtusis vel subacutis basi castaneis, interioribus lanceolatis fulvis plerumque acuminatis; corolla 3–4 mm. longa, lobis purpurascentibus; stylo purpurascenti; planta mascula ignota.—Matane County, QUEBEC: dry open gravel on the tableland-saddle (altitude about 1070 m.) between Mt. Mattaouisse and Mt. Collins, July 8, 1923, *M. L. Fernald, Ludlow Griscom, K. K. Mackenzie, A. S. Pease & L. B. Smith*, no. 26,056 (TYPE in Gray Herb.).

Closely simulating *A. cana* but at once distinguished by its cauline leaves. In *A. cana* these are 9–15, the median and upper ones tapering to a slender subulate tip, only the very uppermost with a scarious tip. In *A. vexillifera* the cauline leaves are fewer (5–8) and all but the very lowermost bear conspicuous broad pennant-like scarious tips (whence the specific name.)

A. vexillifera has the cauline leaf-tips of *A. alpina*, but that species has much narrower and distinctly mucronate basal leaves, larger heads with narrower and more fuscous involucral bracts and longer corollas (4–5 mm. long).

5. A. PYGMAEA Fernald. FIG. 5. Dwarf, *3–4.5 cm. high, monocephalous*, humifuse; the assurgent *stolons very short, not obviously elongated: basal leaves* oblanceolate, mucronate, 8–14 mm. long, 2.5–3.5 mm. wide, *glabrous or glabrate above; the cauline about 9, crowded*, linear-oblanceolate, 6–14 mm. long, lanate beneath, *glabrous or glabrate above, with a* lanceolate or narrowly deltoid *glabrous flat scarious tip* 1.5–2 mm. long: *pistillate involucre* hemispherical, 7 mm. high, 12–13 mm. broad (in the dried material), lanate at base: *bracts in about 5 series, definitely imbricated, oblong, obtuse;* the outer *fuscous,* with a short stramineous tip; the inner with a long obtuse stramineous tip: corollas 4 mm. long: staminate plant unknown.—RHODORA, xvi. 129

(1914).—Known only from northeastern LABRADOR[1] (*Weitz et al.*). *Fl.* August.

6. A. STRAMINEA Fernald. FIG. 8. Plant humifuse, the leafy stolons very short or slightly elongated (up to 7 cm. long): *leaves of the rosette spatulate*, subacute, *barely mucronate*, 5–12 mm. long, 2–4 mm. broad, *white above with dense fine tomentum: flowering stem* 3–14 cm. high, slender, *remotely leafy: cauline leaves* 8–10, linear, 6–14 mm. long, 1–2 mm. wide; the median attenuate to a dark subulate tip; *the upper with a linear scarious tip:* pistillate heads 1–7, usually in a close corymb, hemispheric-campanulate, rounded at base: involucre 5.5–7 mm. high, 4.5–8 mm. broad (in the dried specimens), *with 4–6 series of very distinctly imbricated bracts: the outer bracts ovate or oblong, brown*, slightly lanate at base, with a thin chartaceous stramineous obtuse or subacute tip; the median oblong, with a deltoid obtuse or subacute stramineous tip; the inner with a lanceolate erose stramineous tip: corollas 3.7–4.2 mm. long: achenes glabrous, 1.4 mm. long: longer pappus-bristles 4.5–5 mm. long: style yellowish, becoming brown: staminate plant unknown.—RHODORA, XVI. 130 (1914).—Rocky or turfy calcareous barrens and headlands bordering Notre Dame and Ingornachoix Bays, NEWFOUNDLAND. *Fl.* July, early August.

7. A. ALBICANS Fernald. FIG. 6. Plant humifuse, the leafy stolons very short (up to 2 cm. long): *basal leaves spatulate*, subacute or obtuse, *scarcely mucronate*, 3–8 mm. long, 2–3 mm. wide, *white above with dense minute somewhat shining tomentum:* flowering stem 4.5–9 cm. high, slender, somewhat remotely leafy: *cauline leaves* 9–15, linear, 6–12 mm. long, 1–2 mm. wide; the median attenuate, subulate at tip; *the upper with a glabrous linear scarious tip 2–2.5 mm. long:* pistillate heads (1–)2–5 in *glomerules*, turbinate-campanulate: *involucre*

[1] As noted when *A. pygmaea* was published, this is the plant which Gray in the *Synoptical Flora* treated as *A. carpathica* (Wahlenb,) R. Br.: "Labrador (a monocephalous form!)." But Gray, of course, was writing long before the intensive and highly productive studies of the genus had begun. *A. carpathica* belongs to the very strongly defined non-stoloniferous group of species with erect and elongate basal leaves (the section including *A. eucosma* Fernald & Wiegand, *A. pulcherrima* (Hook.) Greene, *A. lanata* (Hook.) Greene, etc.), while Gray's "monocephalous form" is a humifuse plant with depressed rosettes of tiny leaves. Dr. Theodor Holm, lamenting the disappearance of the name *A. carpathica* from American literature, cites Gray's record of the Labrador plant (*A. pygmaea*), which was not understood by Gray, as proof that *A. carpathica* does grow in America, though in Labrador it so far departs from the European type as to have only a single head (RHODORA, xxii. 142); and he reinforces his argument, that *A. carpathica* is North American, by the statement that, "Having examined a number of specimens of *A. lanata* Greene I find it impossible to distinguish them from *A. carpathica*." I have before me 19 collections of *A. carpathica* of Europe and 26 of the Rocky Mountain *A. lanata*. In the former 2 to 4 of the median and upper cauline leaves end in a lance- or linear-subulate scarious tip, only 1 or 2 of the uppermost leaves ever showing dilated appendages; but in *A. lanata* 4 to 9 of the cauline leaves have broad and conspicuous pennant-like appendages. This perfectly obvious character, supplementing the broader leaves, the smaller heads, shorter corollas and shorter pappus, clearly distinguishes *A. lanata* from *A. carpathica* and it is doubtful if other students of *Antennaria* will follow Holm in forcing it and the wholly different *A. pygmaea* back into the European *A. carpathica*.

4.5–6 mm. high, 4.5–6 mm. wide (in dried specimens): *bracts* in 2–3 series, *subequal, thin;* the outer 3–4 mm. long, oblong or lanceolate, obtuse or subacute, straw-color or brown, green and a little lanate at base; *inner* oblong, obtuse, *lacerate-erose, milk-white:* corollas 3–3.3 mm. long: achenes glabrous, 0.8–1 mm. long: longer pappus-bristles 4–4.3 mm. long: staminate plant unknown.—Rhodora, xvi. 197 (1914).—Dry limestone shingle, northern domes of Table Mt., Port à Port Bay, Newfoundland. *Fl.* July.

8. A. nitida Greene. Fig. 9. Resembling *A. albicans.* Pistillate plant with the stiffish stolons up to 6 dm. long: basal leaves 0.5–1.5 cm. long: flowering stems 0.5–2 dm. high: *cauline leaves 9–18; the middle and upper merely short-mucronate:* heads 5–9 in a glomerule: *involucre 6–7 mm. high, viscid-hirsute: bracts* about 4-seriate, *very unequal; the outer* 3–4.5 mm. long, oblong, obtuse, *whitish,* green and densely lanate at base; *the inner* white, gradually narrower, obtuse, *entire or barely erose:* corollas 3–3.5 mm. long: achenes 0.8–1.2 mm. long: longest pappus-bristles 5 mm. ong. Staminate plant with glomerules 1–2 cm. in diameter: involucre with firm creamy or yellowish oblong to obovate entire to merely crenulate bracts: corollas 3.5 mm. long: pappus 4–4.5 mm. long, upwardly barbellate; the slightly dilated (rarely broad) tips crenate.—Pittonia, iii. 283 (1898). *A. arida viscidula* E. Nelson, Proc. U. S. Nat. Mus. xxiii. 710 (1901). *A. viscidula* Rydberg, Fl. Colo. 369 (1906).—Dry limestone soil, Charlton Isl., James Bay, Quebec to Athabasca and Utah. *Fl.* late June, July.

9. A. **Peasei**, spec. nov. (Fig. 11), humifusa, stolonibus foliosis confertis perbrevibus (ad 2 cm. longis); foliis basilaribus late oblanceolatis vel anguste cuneato-obovatis 7–12 mm. longis 2–4.5 mm. latis mucronatis supra albidis, tomento denso minuto; caule florifero 3–7 cm. alto gracili; foliis caulinis 5–7 lineari-lanceolatis 0.8–1.5 cm. longis, imis mediisque subulato-mucronatis, superioribus 2 vel 3 apice scarioso oblongo-lanceolato 2–3 mm. longo munitis capitulis femineis 2–5 dense corymbosis hemisphaerico-campanulatis basi rotundatis; invo ucro 6–7 mm. alto basi lanato; bracteis 2–3-seriatis subaequalibus chartaceo-petaloideis, exterioribus oblongis subacutis pallide brunneis basi subcastaneis, interioribus similibus acuminatis lacteis; corollis 3.8–5 mm. longis; stylo purpurascenti; achaeniis glabris; planta mascula ignota.—Matane County, Quebec: talus of mica-schist, chimney east of Razorback Ridge (altitude 850–1000 m.), Mt. Logan, July 13, 1923, *A. S. Pease & L. B. Smith,* no. 26057 (type in Gray Herb.).

Related to *A. albicans* of western Newfoundland and *A. subviscosa* of Rimouski County, Quebec. From the former distinguished by the distinctly mucronate and loosely tomentose basal leaves, the few cauline leaves, the larger heads, the acuminate inner involucral bracts and the longer corolla; *A. subviscosa* is a coarser plant with trailing

branches often 4 or 5 dm. long. It has 7–9 cauline leaves, the uppermost with subulate or involute tips; its heads are more numerous (3–9) and its glandular-viscid involucres have more definitely imbricated bracts.

Various cordilleran species, *A. umbrinella* Rydberg, *A. pulvinata* Greene, etc., are related to *A. Peasei* but I am unable to find any species to which it can be satisfactorily referred.

10. A. SUBVISCOSA Fernald. FIG. 10. Plant densely humifuse, the *trailing branches sublignous*, often 4–5 dm. long; stolons very short and crowded: *leaves of the rosettes spatulate, obtusish, scarcely mucronate* or with a very short mucro, 0.5–1.5 cm. long, 2–5 mm. broad, densely white-tomentose: *flowering stems* 0.5–1.5 dm. high, white-tomentose throughout, *glandular-hirsute above: cauline leaves* 7–10, tomentose; the lower linear-oblanceolate, mucronate, 1.5–2.5 cm. long; *the upper* linear-attenuate, *with a subulate or involute subscarious pubescent tip:* pistillate heads 3–9, densely or loosely corymbose: *involucre* turbinate-campanulate, 5–6.5 mm. high: *bracts* about 3-seriate; *the outer* 3–4 mm. long, oblong, subherbaceous, greenish or stramineous, often rose-tinged, *glandular-viscid*, with a thin obtuse *cream-colored or rose-pink tip;* interior narrower, acutish: corollas 3.8–4.3 mm. long: *achenes papillose*, 1–1.2 mm. long: longer pappus-bristles 4.5–5 mm. long: staminate plant unknown.—RHODORA, XVI. 131 (1914).—Cold north-facing limestone sea-cliffs east of Bic, Rimouski Co., QUEBEC. *Fl.* July.

11. A. ISOLEPIS Greene. FIG. 7. Humifuse, the leafy stolons up to 7 cm. long: *rosette-leaves oblanceolate or oborate*, subacute or obtuse, *short mucronate, 0.8–2.5 cm. long, 2–7 mm. broad*, densely *white-tomentose* above: flowering stems 0.7–2.5 dm. high, flexuous: cauline *leaves 9–18*, linear-oblanceolate, tomentose, 1.5–3 cm. long, 2–4 mm. broad; the lower with subulate tips; *the 5–8 upper with broad flat scarious tips:* heads 5–9, corymbose: pistillate involucres 6–8 mm. high: *bracts of about 3 lengths, fuscous except for the oblong erose white or whitish widely spreading petal-like tips:* corollas 3–3.7 mm. long: *achenes sparingly papillose*, 1–1.2 mm. long: longest pappus-bristles 4.5–5.5 mm. long: staminate plant unknown.—Ottawa Nat. XXV. 41 (1911).—Coast of Hudson Strait, UNGAVA DISTRICT, and south near the outer coast at least to Port Manvers, LABRADOR. *Fl.* July, August.

EXPLANATION OF PLATE 142.

FIG. 1, *Antennaria alpina* × 1; 1a, tip of median cauline leaf × 4. FIG. 2, *A. Sornborgeri* × 1; 2a, tip of median cauline leaf × 4. FIG. 3, *A. cana* × 1; 3a, tip of median cauline leaf × 4. FIG. 4, *A. vexillifera* × 1; 4a, tip of median cauline leaf × 4. FIG. 5, *A. pygmaea* × 1; 5a, tip of median cauline leaf × 4. FIG. 6, *A. albicans* × 1; 6a, tip of median cauline leaf × 4; 6b, inner bract of involucre × 4. FIG. 7, *A. isolepis* × 1; 7a, tip of median cauline leaf × 4. FIG. 8, *A. straminea* × 1; 8a, tip of median cauline leaf × 4. FIG. 9, *A. nitida* × 1; 9a, tip of median cauline leaf × 4; 9b, inner bract of involucre of staminate plant × 4. FIG. 10, *A. subviscosa* × 1; 10a, tip of median cauline leaf × 4; 10c, central flower and achene × 4. FIG. 11, *A. Peasei* × 1; 11a, tip of median cauline leaf × 4; 11c, central flower and achene × 4.

III. THE EASTERN AMERICAN REPRESENTATIVES OF ARNICA ALPINA.

(Plate 143.)

In 1905 I published[1] a synopsis of the species of *Arnica* known in northeastern America and at that time predicted that "doubtless many other species will be found, especially on the mountains and cliffs of eastern Quebec." Although the prediction has not yet been wholly fulfilled, two very distinct new species have been discovered, one on the Long Range of western Newfoundland, the other in the Shickshock Mountains. In determining the exact relationships of one of these plants, discovered in 1923 on Mt. Logan and the neighboring Mt. Mattaouisse in Matane County, Quebec, it has seemed appropriate to present a new treatment of the eastern species with few and small cauline leaves and with white and merely barbellate pappus (*A. alpina* and its allies) and to publish Miss Brackett's drawings of these species. In order to show the contrast between these plants and the well known *A. mollis* Hook. of the Rocky Mountains and of the Gaspé Peninsula and of northern New England and northern New York, the latter species is also included in the key, although it seems unnecessary to discuss it in detail.

a. Stem-leaves 1–4 pairs (sometimes scattered small bracts above), at least the upper entire or only sparingly toothed: pappus white or whitish; its bristles merely barbellate *b.*
  b. Achenes copiously hirsute from base to summit *c.*
    c. Lower leaves entire or with only remote irregular teeth *d.*
      d. Base of involucre and summit of peduncle villous-lanate *e.*
        e. Leaves nearly glabrous or only minutely glandular-hispid: involucral bracts 15–20, narrowly lanceolate, 2–3 mm. broad, only sparingly pubescent above the middle: ligules with blunt lobes only 1–2 mm. long.....1. *A. alpina.*
        e. Leaves loosely villous: involucral bracts 8–10, narrowly rhombic, 3–3.5 mm. broad, loosely villous to the tip: ligules with acutish lobes 3–5 mm. long.....2. *A. pulchella.*
      d. Base of involucre and summit of peduncle viscid-villous but hardly lanate *f.*
        f. Leaves glabrous or merely minutely pilose on nerves and margin, entire; the cauline lanceolate to oblong: stem glabrous or essentially so at base: involucral bracts oblanceolate, 1 cm. long, glandular-villous at base, only sparingly pilose or glabrate above: ligules with blunt lobes only 1–2 mm. long.....3. *A. plantaginea.*
        f. Leaves glandular-puberulent and viscid-villous, irregularly dentate; the cauline linear or linear-

[1] Rhodora, vii. 146-150 (1905).

lanceolate: stems viscid-villous at base: involucral bracts linear- to lance-attenuate, 1.2–1.5 cm. long, uniformly viscid-villous: ligules with acutish lobes 3–5 mm. long.....4. *A. Sornborgeri.*

c. Lower leaves regularly dentate *g.*

g. Disk-corollas 6–8 mm. long, with glabrous or only sparingly setose lobes; the densely pilose portion of the tube and throat 3.5–6 mm. long: mature pappus 5–8 mm. long, bright-white.....5. *A. chionopappa.*

g. Disk-corollas 9–10 mm. long, with copiously setose lobes; the densely pilose portion of the tube and throat 7–9 mm. long: mature pappus 9–10 mm. long, creamy-white.....6. *A. gaspensis.*

b. Achenes glabrous or nearly so below the middle.....7. *A. Griscomi.*

a. Stem-leaves 3–5 pairs, all evenly dentate: pappus yellowish-brown or olive-tinged; its bristles subplumose.....8. *A. mollis.*

1. A. ALPINA Olin & Ladau. FIG. 1. *Stem* 0.5–3 dm. high, *sparingly short-villous below,* densely so above, copiously villous-lanate at tip: *leaves nearly glabrous or minutely glandular hispid;* the basal linear-lanceolate, 3–9 cm. long, 0.4–1.6 cm. broad, entire or with few remote small teeth; cauline 1–3 pairs, entire, sessile, the lowest usually much longer than the reduced upper ones: heads solitary (rarely 2–4), 4–6 cm. broad: *involucre densely villous-lanate at base; its 15–20 narrowly lanceolate* long-acuminate usually purplish *bracts only sparingly pubescent above the middle,* 1.2–1.5 cm. long, *2–3 mm. broad: ligules 10–15, with 3 blunt lobes 1–2 mm. long:* achenes hirsute: pappus cream-white; its bristles barbellate.—Diss. 11 (1799), acc. to Ind. Kew. *A. montana, β alpina* L. Sp. Pl. ii. 884 (1753). *A. angustifolia* Vahl, Fl. Dan. ix. t. 1524 (1818).—Arctic regions, south to rocky slopes of the Torngat Mts., Labrador, Mosquito Bay, Ungava Distr., northern Manitoba, and Alaska; arctic and alpine Eurasia. *Fl.* August.

2. A. PULCHELLA Fernald. FIG. 2. *Stem* 1–1.8 dm. high, *villous,* especially above, *with white hairs 1–2 mm. long* mixed with minute stipitate glands: *leaves loosely villous* on both surfaces; the basal lanceolate or oblanceolate, 3–15 cm. long, 0.5–1.5 cm. broad, entire or remotely callous-dentate; cauline 1–2 pairs, entire: head solitary, 4.5 cm. broad: *involucre densely villous-lanate at base; its 8–10 narrowly rhombic* long-attenuate *bracts* glandular and *loosely villous to the tip,* 1.5 cm. long, *3–3.5 mm. broad: ligules* about 10, *with 3–4 sharp lobes (the longest 3–5 mm. long):* achenes hirsute: pappus white, barbellate.—RHODORA, xvii. 18 (1915).—Dry exposed limestone ledges and shingle, Table Mt., Port à Port Bay, Newfoundland. *Fl.* July.

3. A. PLANTAGINEA Pursh. FIG. 4. *Stem 1.5–4.5 dm. high, glabrous or only very sparingly villous-hispid below,* glandular-puberulent at summit: *leaves glabrous or minutely pilose on the nerves and margins, entire; the basal oblong to oblanceolate,* 0.6–1 dm. long, 1.2–2 cm. broad; cauline 3–4 pairs, sessile, the lower 7–13 cm. long, the upper much reduced: heads 1–3, 4–5 cm. broad: *involucre* glandular-villous at

base; *its 10–12 oblanceolate bracts 1 cm. long, sparingly pilose or glabrate above the base: ligules* 10–15, *with 3 blunt lobes 1–2 mm. long:* achenes hispid: pappus white, barbellate.—Fl. 527 (1814); Fernald, RHODORA, vii. 147 (1905). *A. angustifolia* Torr. & Gray, Fl. ii. 449 (1843), in part, not Vahl. *A. alpina* Gray, Syn. Fl. i. pt. 2: 382 (1886), in part, not Olin & Ladau. *A. alpina*, var. *Lessingii* Fernald & Sornborger, Ott. Nat. xiii. 106 (1899), in part, not Gray.—Banks of mountain-brooks, etc., Ramah to Nain, Labrador, west to Kooksoak River, Ungava District. *Fl.* August.

4. A. SORNBORGERI Fernald. FIG. 3. *Stem* 1.5–2 dm. high, *viscid-villous throughout,* densely so at summit: *leaves glandular-puberulent and viscid-villous, irregularly dentate;* the basal linear-lanceolate to narrowly oblong, 6–9 cm. long, 0.8–1.6 cm. broad; cauline 3 pairs, linear to lanceolate: head solitary, 4.5–6 cm. broad: *involucre uniformly viscid-villous throughout; its 10–12 linear- to lance-attenuate bracts 1.2–1.5 cm. long: ligules* 10–15, *with acutish lobes 3–5 mm. long:* achenes hirsute: pappus white, barbellate.—RHODORA, vii. 147 (1905).—Rocky banks of streams, Torngat Mts., Labrador. *Fl.* August, September.

5. A. CHIONOPAPPA Fernald. FIG. 5. *Stem* 0.7–4 dm. high, *loosely or sparingly villous: leaves sparingly villous or glabrate; the basal* lanceolate to narrowly ovate, *regularly dentate,* 0.3–1.8 dm. long, 0.5-3.3 cm. broad; cauline 2–4 pairs, the lower slender-petioled and resembling the basal, the upper sessile and much smaller: heads 1–4, 3–4 cm. broad: *involucre villous throughout; the 10–15 linear- to lance-attenuate bracts 7–13 mm. long:* ligules 10–15, with short bluntish lobes: *disk-corollas 6–8 mm. long,* with glabrous or only sparingly setulose lobes; *the densely pilose portion of the tube and throat 3.5–6 mm. long: achenes* densely short-setulose, 4–6 mm. long; the ascending *white hairs about equaling one-half the diameter of the achene: pappus bright-white, in fruit 5–8 mm. long.*—RHODORA, vii. 148 (1905).—Calcareous ledges, shingle, cliffs and river-gorges, Table Mt., Port à Port Bay, Newfoundland; Cap-Rosier, Gaspé Co., Quebec to the Tobique River, New Brunswick. *Fl.* late June–ear y August.

6. A. GASPENSIS Fernald. FIG. 6. *Stem* 3–4 dm. high, villous below, *glandular-puberulen' above: leaves sparingly pilose on both surfaces,* lanceolate; the lower with sharp spreading teeth, 6–12 cm. long, 1.2–2.3 cm. broad; the 3 or 4 pairs of cauline sessile, the upper much reduced: heads 1–4, 4–5 cm. broad: *involucre glandular puberulent and sparingly pilose; its 8–10 oblong bracts* 1 cm. long, *with triangular tips: ligules* about 10, *sharply lobed: disk-corollas slenderly funnelform, 9–10 mm. long, with copiously setose lobes; the densely pilose portion of the tube and throat 7–9 mm. long:* achenes hirsute with short and *long hairs, the latter nearly equaling the diameter of the achene: pappus cream-white, in fruit 9–10 mm. long.*—RHODORA, vii. 148 (1905).—Calcareous ledges and cliffs, Cap Tourelle, Gaspé Co., Quebec. *Fl.* July.

7. A. **Griscomi,** n. sp. (FIG. 7), rhizomate gracili 0.4–1 dm. longo

horizontali vel oblique adscendente; caule solitario (rarissime 2–3) piloso supra sparse villoso-hirsuto 0.8–2.5 dm. alto; foliis rosulatis lanceolato-ellipticis 3–10 cm. longis 0.5–2 cm. latis subacuminatis basi angustis plus minusve petiolatis supra papillosis vel sparsissime villosis glabratisque ci iatis margine calloso-serratis, dentibus 3–7-jugis; foliis caulinis 1–2-jugis, inferioribus oblanceolatis vel oblongis vel lanceolato-ovatis remote serratis vel integris glabris vel papillosis, superioribus valde reductis apice calloso-subulatis; pedunculis 1–3 nudis vel bracteolatis, bracteolis linearibus apice subulati-filiformibus; capitulis 2.5–4 cm. diametro; involucro 1–1.5 cm. alto basi minute piloso supra glabro; bracteis 8–10 anguste rhomboideis 2–3 mm. latis acuminatis ciliatis dorso glabris, paginis interioribus apice villosis; ligulis 9–12 luteis, lamina 1–1.5 cm. longa 4–5 mm. lata 7–9-nervata apice 3-dentata, dentibus longioribus 0.5–1 mm. longis; corollis disci 6–7 mm. longis, tubo villoso 2.5–3.5 mm. longo; achaeniis 3–3.5 mm. longis glabris vel ad apicem sparse breviterque hirsutis; pappo 6–7 mm. longo albo, setis barbellulatis.—Matane County, Quebec: moist rock-walls and shelves of hornblende-schist at head (altitude about 1070 m.) of Big Chimney, Mt. Mattaouisse, July 8, 1923, *M. L. Fernald, Ludlow Griscom, K. K. Mackenzie, A. S. Pease & L. B. Smith,* no. 26,082; same station, August 20, 1923, *Fernald & Smith,* no. 26,085; dry schistose crests and talus of Razorback Ridge (altitude 850–1000 m.), Mt Logan, July 13, 1923, *Pease & Smith,* no. 26,083; cold chimneys in the schist at about 900–1000 m. altitude, south of Fernald Pass, Mt. Mattaouisse, August 20, 1923, *Fernald & Smith,* no. 26,084 (type in Gray Herb.).

Named for Ludlow Griscom, professional ornithologist, keen amateur botanist, tireless explorer and choice companion, who first discovered the plant which subsequently proved to be somewhat generally distributed on the cold walls of Mts. Mattaouisse and Logan.

Arnica Griscomi belongs to the group of species nearly related to *A. alpina.* From all of them it is distinguished by its achenes being glabrous at base or often nearly throughout; *A. alpina, A. plantaginea, A. chionopappa, A. gaspensis* and *A. arnoglossa* Greene, the five species to which it is most nearly related, having the achenes densely hirsute with omparatively long trichomes. In *A. alpina,* furthermore, the entire basal leaves are very narrow, and the involucre is densely lanate at base and it has more numerous and narrower bracts. *A. chionopappa* has the more numerous linear- or lance-attenuate bracts villous throughout, the ligules more numerous, the villous portion of the disk-corolla longer, and the achenes longer; *A. plantaginea* has the stem glabrous or essentially so at base but distinctly glandular above and its leaves are entire; *A. gaspensis* (which is

known only at the type-station where it has thrice been collected) has the involucral bracts glandular as well as pilose, its disk-corollas slender and longer than in others of the group and with the villous tube more than twice as long as in *A. Griscomi*, its achenes nearly twice as long and its pappus creamy- or sordid-white instead of snow-white. *A. arnoglossa*, described from the Black Hills, is densely glandular-puberulent above and the very young achenes (the only ones seen) are definitely longer than the mature ones of *A. Griscomi*.

EXPLANATION OF PLATE 143.

FIG. 1, *Arnica alpina* × 1; 1a, disk-flowered × 4; 1b, tip of ligule × 4. FIG. 2, *A. pulchella* × 1; 2b, tip of ligule × 4. FIG. 3, head of *A. Sornborgeri* × 1. FIG. 4, *A. plantaginea* × 1. FIG. 5, *A. chionopappa* × 1; 5a, disk-flower × 4. FIG. 6a, disk-flower of *A. gaspensis* × 4. FIG. 7, *A. Griscomi* × 4; 7a, disk-flower × 4.

(To be continued)

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLVI.

COMPOSITAE.

FLAVERIA.

F. BIDENTIS (L.) Ktze. On woolwaste, Westford (*Miss E. F. Fletcher*, Oct. 6, 1913). Specimen in herb. Gray. Adventive from South America.

GALINSOGA.

G. CILIATA (Raf.) Blake. (*G. parviflora* Cav., var. *hispida* DC.; *G. aristulata* Bicknell. See RHODORA xxiv. 34, 1922; Bull. Torr. Bot. Club xliii. 270–271, 1916). A weed in rich soil; common, especially in the cities.

G. BICOLORATA St. John & White. RHODORA xxii. 97–101, 1920. Shore of Charles River, Cambridge (*F. S. Collins*, Sept. 26, 1916). Specimen in herb. N. E. Botanical Club.

G. CARACASANA (DC) Sch. Bip. Weed in Botanic Garden, Cambridge (*M. L. Fernald*, Sept. 14, 1909).

G. PARVIFLORA Cav. A weed in rich soil; frequent in and near Boston.

GNAPHALIUM.

G. decurrens Ives. Dry soil, occasional from Blue Hills northward.

G. obtusifolium L. (*G. polycephalum* Michx. See RHODORA XX. 71–73, 1918.) Dry fields, pastures and beaches, very common throughout.

G. PURPUREUM L. Ipswich (*J. A. Lowell*, no date); dump, Lowell (*C. W. Swan*, Aug. 6, 1884).

G. uliginosum L. Weed in rich moist soil, common.

GRINDELIA.

G. ROBUSTA Nutt. Colburn's mill yard, Lowell (*C. W. Swan*, 1885). Specimen in herb. N. E. Botanical Club. Native on the Pacific coast of the United States.

HELENIUM.

H. AUTUMNALE L. Merrimac River, Essex County (*Miss Prince*, October, 1887). Specimen in herb. Boston Soc. Nat. Hist.

H. NUDIFLORUM Nutt. A rare waif at Andover, Concord, Sherborn and Duxbury.

H. TENUIFOLIUM Nutt. Introduced, probably with wool, rare; Georgetown, Malden, Danvers, S. Boston.

HELIANTHUS.

H. ANNUUS L. Vacant lots and dumps, especially near the cities; frequent and variable.

H. divaricatus L. Dry open woods and roadsides, common.

H. DEBILIS Nutt., var. CUCUMERIFOLIUS Gray. Waste ground, Fenway, Boston (*A. S. Pease*, Oct. 10, 1906). Specimen in herb. N. E. Botanical Club. Native from Texas westward.

H. decapetalus L. A plant of rich alluvial soil; Georgetown (*Mrs. C. N. S. Horner*, 1876); Tewksbury (*C. W. Swan*, July 7, 1883); reported from Lowell, Medford and Malden in Dame & Collins, Fl. Middlesex Co. 52, 1888.

H. GIGANTEUS L. Melrose (*T. Morong*, 1876); grove on Center St., Milton (*N. T. Kidder*, Sept. 8, 1918).

H. GROSSESERRATUS Martens. By brook at west base of Zion's Hill, Woburn (*M. L. Fernald*, September, 1899); escape at Needham (*J. R. Churchill*, Aug. 31, 1901); rubbish, edge of salt-marsh, Milton

(*N. T. Kidder*, Sept. 11, 1921); Bellingham (*F. W. Hunnewell*, no date).

H. LAETIFLORUS Pers. Marsh back of Stillman Infirmary, Charles River, Cambridge (*W. Deane*, Sept. 7, 1913); sparingly escaped, Hingham (*C. H. Knowlton*, Sept. 5, 1909).

H. MAXIMILIANI Schrad. Sandy field by Wright's Pond, Middlesex Fells, Medford, spreading (*F. S. Collins*, Aug. 29, 1909, Sept. 7, 1910).

H. PETIOLARIS Nutt. Woollen mill, Graniteville, Westford (*C. W. Swan*, Sept. 15, 1884); railway embankment, Dedham (*C. E. Faxon*, Oct. 2, 1898).

H. SCABERRIMUS Ell. Waste places, rare; Boston, Brookline, W. Roxbury, Milton.

H. strumosus L. Borders of woods in rich soils, common.

H. TUBEROSUS Michx. Old gardens and waste places, occasional.

HELIOPSIS.

H. SCABRA Dunal. A waif in fields at Medford, Sherborn and Lincoln.

HEMIZONIA.

H. FASCICULATA (DC) T. & G. Sown by wool refuse, N. Chelmsford (*W. P. Alcott*, July 1, 1879). Specimens in herb. N. E. Botanical Club and Peabody Acad. Sci.

HIERACIUM.

H. AURANTIACUM L. Fields and waste places, occasional.

H. canadense Michx. Borders of woods and other dry places, common throughout.

H. FLORENTINUM All. Dry soil, rare; Brookline, Newton, Wellesley Hills, Milton, Quincy.

H. Gronovii L. Dry sandy soil, rare; Natick, Norwood, Scituate, Pembroke, Duxbury, Easton.

H. marianum Willd. Open woods, rare; Natick, Stony Brook, and Blue Hills Reservations southward. An early-blooming plant, not too distinct from *H. scabrum*.

H. paniculatum L. Open woods, frequent.

H. paniculatum L., forma **glandulosum** Hoffm. RHODORA xix. 37, 1917. Jamaica Plain (*E. & C. E. Faxon*, June 26, 1889); W. Roxbury (*E. & C. E. Faxon*, July 1, 1890); Blue Hills, Milton (*E. &*

C. E. Faxon, July 22, 1889); shaded bank, border of bog, Natick (*J. P. Bill & F. W. Grigg*, Aug. 12, 1922).

H. PILOSELLA L. Grassland, Dorchester (*J. R. Churchill*, June 27, 1912); Wellesley (*F. W. Hunnewell*, no date); Milton (*N. T. Kidder*, May 22, 1896).

H. PILOSELLA L., var. VIRIDE Ser. Spreading in field, Walker St., Cambridge (*M. L. Fernald*, June 6, 1894, June 6, 1895). Specimens in herb. Gray.

H. PRAEALTUM Gochnat, var. DECIPIENS Koch. Dry pasture, spreading, Andover (*A. S. Pease*, June 1, 1902 to June 12, 1904). Specimens in herb. Gray and N. E. Botanical Club.

H. scabrum Michx. Dry woods and roadsides, common throughout.

H. SUBRHOMBOIDEUS Rydberg. (Memoirs New York Bot. Garden, i. 419, 1900). Shady roadside, Sharon (*J. P. Bill & F. W. Grigg*, Aug. 25, 1922). Native of Montana.

H. venosum Michx. Dry woods and fields; common throughout, but very few records from Essex County.

H. venosum Michx., var. **subcaulescens** T. & G. Waltham (*F. S. Collins*, June 17, 1886); Jamaica Plain (*E. & C. E. Faxon*, June 23, 1889); woodpath, Blue Hill Res. (*W. P. Rich*, June 9, 1895).

H. VULGATUM Fries. Border of wood, W. Roxbury (*F. G. Floyd*, July 1, 1915); sparingly introduced in Milton (*G. G. Kennedy*, July 9, 1901; other collections by different collectors to 1919).

HYPOCHAERIS.

H. GLABRA L. Woolwaste, N. Chelmsford (*W. P. Alcott*, 1878). Specimen in herb. Peabody Acad. Sci.

INULA.

I. HELENIUM L. Moist roadsides and pastures, occasional.

I. SALICINA L. Introduced near carpet factory, now eradicated, Tapleyville, Danvers (*J. H. Sears*, Aug. 8, 1879). Specimen in herb. Peabody Acad. Sci.

IVA.

I. oraria Bartlett. Salt-marshes, common all along the coast.

I. XANTHIFOLIA Nutt. Vacant lots and waste places; Danvers, Cambridge, S. Boston, Woburn, Milton, Wellesley.

KRIGIA.

[*K. amplexicaulis* Nutt. Reported from wet meadow, Framingham, in RHODORA i. 97, 1899, but no specimen is available.]

K. virginica (L.) Willd. Dry fields and open woods, common.

LACTUCA.

L. canadensis L. See RHODORA xxii. 10–11, 1920, for revision of this species and its varieties and forms which follow. Moist soil, common.

L. canadensis L., var. **integrifolia** (Bigelow) Gray. Occasional.

L. canadensis L., var. **integrifolia** (Bigelow) Gray, forma **angustata** Wiegand. Sandy sea-beach, Pemberton (Hull) (*B. L. Robinson*, Aug. 27, 1897). Specimen in herb. Gray.

L. canadensis L., var. **latifolia** O. Kuntze. Occasional north and west of Boston.

L. canadensis L., var. **latifolia** O. Kuntze, forma **exauriculata** Wiegand. Rare; Wenham (type station), Revere, Winchester, Dorchester.

L. canadensis L., var. **obovata** Wiegand. Occasional, but few records inland (type from Wellesley).

L. canadensis L., var. **obovata** Wiegand, forma **stenopoda** Wiegand. Salisbury (*A. A. Eaton*, Aug. 20, 1899). Specimen in herb. N. E. Botanical Club.

L. canadensis L., forma **angustipes** Wiegand. Beaver Brook Reservation (*N. T. Kidder*, Aug. 9, 1919); Needham (*T. O. Fuller*, Aug. 14, 1893).

L. hirsuta Muhl. Dry fields and woods, rare.

L. Morssii Robinson. W. Medford (*C. H. Morss*, Oct. 4, 1902); Green Harbor, Marshfield, reclaimed salt-marsh (*C. H. Morss*, Aug. 14, 1898, Aug. 22, 1899); gravelly soil, W. Roxbury, one plant (*N. T. Kidder*, Sept. 25, 1919).

L. SCARIOLA L. Waste land, Lowell (*C. H. Knowlton*, Sept. 12, 1902). Specimen in herb. C. H. Knowlton.

L. SCARIOLA L., var. INTEGRATA Gren. & Godr. Waste places, occasional; especially abundant around Boston and Cambridge.

L. spicata (Lam.) Hitchc. Low ground, frequent throughout.

C. H. KNOWLTON
WALTER DEANE
} *Committee on Local Flora.*

Josselyn Botanical Society, Annual Field Meeting.—The twenty-ninth annual meeting of the Josselyn Botanical Society of Maine will be held at Ashland, Aroostook County, *July 14–19, inclusive*. Mr. J. Sterling Campbell will care for the party at the rate of $2.50 per day. Ashland is reached by way of Ashland Junction on the Bangor & Aroostook R. R. It is in limestone country, situated on the Aroostook River. The days will be given to collecting; the evenings to examination and identification of specimens with some informal programmes. Members wishing to attend will please write early to Mr. J. Sterling Campbell, Ashland, Maine.—Lena Willis, *Secretary*, Naples, Maine.

Vol. 26, no. 304, including pages 61 to 88 and plates 140 and 141, was issued 2 June, 1924.

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Vol. 26. June, 1924. No. 306.

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY.—New Series.—No. LXXII.

(*Continued from page 108.*)

IV. SOME SENECIOS OF EASTERN QUEBEC AND NEWFOUNDLAND.

(Plate 144.)

Senecio resedifolius.—In 1818 Ledebour described from the Altai of Siberia a monocephalous Senecio under the name *Cineraria lyrata*.[1] The plant was subsequently collected by Bunge, Fischer, Tiling, Turczaninow, Charles Wright and others in the Altai and Baikal regions or at other points in Siberia eastward to Amur and the coast of Bering Straits. It is a well marked but highly variable plant, a single variation of which was illustrated in Reichenbach's *Iconagraphia*.[2] In 1831 Lessing gave a beautifully detailed description of one of Chamisso's plants from Bay St. Lawrence or Gulf of St. Lawrence on the Asiatic side of Bering Straits as *Senecio resedifolius*,[3] and as a synonym he cited *Cineraria lyrata* Less., Lessing's specific name being unavailable on account of the older *Senecio lyratus* L. f.

Gradually the knowledge of *Senecio resedifolius* was extended until, in 1867, Herder[4] recognized it as a wide-ranging species, extend-

[1] Ledeb. Mém. Acad. Pétersb. v. 576 (1818).

[2] Reichenb. Ic. Bot. Crit. ii. l, t. 101 (1824).

[3] Lessing, Linnaea, vi. 243 (1831). Lessing's account says clearly that the original habitat was "In sinu St. Laurentii cel. de Chamisso" and one of the original labels in Chamisso's hand, in the Gray Herbarium, is equally explicit: "Sin. St. Laurent." This, of course, is the well known Bay or Gulf of St. Lawrence on the west side of Bering Straits, where many types were collected by Chamisso. Greenman in his monograph (Ann. Mo Bot. Gard. iii. 99) erroneously cites the Chamisso material as coming from "Alaska: St. Lawrence Island, *Chamisso*."

[4] Herder, Reisen in den Süden von Ostsibirien, iii. Heft. 2: 116 (1867).

ing from Bering Straits across aretic Siberia and south to the Altai, and along the coast of Alaska to "Brittisch Nord-Amerika." In 1916 its range, as understood by the monographer of the genus, Greenman,[1] was essentially the same, he citing specimens from as far south as the Aleutian and Shumagin Islands and "Mucklung River" (supposed to be in British Columbia). At the same time *Senecio Fernaldii* Greenman,[2] from a spur of the Long Range in Newfoundland, was described as a new species. The type of the latter was a single rather exceptional individual,[3] but it showed characters in the foliage and in its lack of ligules which seemed to separate it from the ordinarily radiate *S. resedifolius*. Subsequently, however, the Newfoundland plant (figs. 1[3] and 1[4]) has been twice collected in quantity at the type-locality, in July, 1914 (*Fernald & St. John*, no. 10,873) and in July, 1921 (*Mackenzie & Griscom*, no. 10,483). A few individuals of these later collections are good matches for the type; but of the 47 plants of these two collections preserved in the Gray Herbarium all but these half-dozen individuals show such departures in the toothing and shape of the basal leaves, development and cutting of the cauline leaves, and development of ligules that, by those who have not seen them growing in one area of limestone shingle, and who might depend too reliantly upon the key-characters used by Greenman, "heads . . . discoid," and "Lower leaves sharply dentate," they might readily be mistaken for several species. The basal leaves may be sharply dentate, rounded-dentate or shallowly undulate, oblanceolate, rhombic, elliptic, orbicular or reniform, and at base from narrowly cuneate to cordate. The middle and upper cauline leaves likewise vary from linear- or lance-attenuate to deltoid and from entire to pinnatifid; and the heads are either discoid or radiate. *S. Fernaldii*, growing as it does upon a dry exposed limestone tableland without shelter from wind and brilliant light, is a dwarf plant with strong tendency to purple coloring in leaves and involucre, and in all these features, as well as in its disk-flowers, the individuals with crenate-dentate basal leaves seem quite inseparable from Chamisso's original material from the west side of Bering Strait of *S. resedifolius*,

[1] Greenman, Ann. Mo. Bot. Gard. iii. 99 (1916).

[2] Greenman, l. c. 90 (1916).

[3] "but after we had repeatedly made solemn vows to look at nothing else and were finally hastening back across the barren in order to reach the settlement before dark, an unusual appearing Senecio came riding down a mass of sliding gravel to my very feet. This was too great a temptation, so I snatched the plant as it was sliding past." —Fernald, Rhodora, xiii. 131 (1911).

while others are inseparable in foliage, involucre and disk-corollas from material collected by Charles Wright on Arakamtchetchene Island in Bering Straits or by Blaisdell at Cape Nome; while taller and looser-growing individuals are almost identical with Weinmann's specimens from the Kuskokwim Valley in Alaska. The only difference I can make out is that the material from about Bering Sea usually has well developed rays; the Newfoundland plant is usually discoid, though occasionally with short ligules; but the ligules of the Chamisso material are nearly as short as in the radiate plants from Newfoundland, while *S. resedifolius*, var. *columbiensis* Gray is a lax and luxuriant shade-form separated because of its rayless heads. I am, therefore, unable to find any stable characters by which *S. Fernaldii* can be maintained as specifically distinct from *S. resedifolius*.

During the summer of 1923, the party[1] exploring the schistose mountains centering on Mt. Logan in Matane County, Quebec, found a very handsome Senecio with large commonly solitary and radiate heads. This plant (figs. 1^1, 1^2 and 1a), which abounds in turfy chimneys and upon cliffs and talus at altitudes of 850–1150 m. on Mts. Fortin, Logan and Pembroke, and which in its well developed green leaves (basal leaves up to 3 cm. broad, cauline leaves in luxuriant plants up to 8 cm. long and 3.5 cm. broad), tall stature (often 2–3 dm.) and showy elongate ligules, did not suggest in the field the little purplish plant of the dry barrens of western Newfoundland already discussed; but at one station, the dry upper talus and cliffs at the head of Hanging Valley on Mt. Pembroke, plants clearly conspecific with the large-leaved specimens of the moister chimneys had the low stature, reduced foliage and occasionally the discoid heads of the Newfoundland plant. Altogether the plant of the Shickshock Mts. shows almost every conceivable variation, even for so protean a group as *Senecio*, and in this series collected at three closely adjacent stations all the recorded variations of *S. resedifolius* can be matched.

The variation of *S. resedifolius* which was described by Ledebour from the Altai as *Cineraria lyrata* is so much taller and has so much better-developed basal leaves than Chamisso's plant that it has been treated by DeCandolle, Herder and others as a distinct variety, var. *lyratus* (Ledeb.) DC., supposed to be confined to the Altai and Baikal region; but some of the individuals from the Shickshock Mts. are

[1] J. F. Collins, C. W. Dodge, M. L. Fernald, Ludlow Griscom, K. K. Mackenzie, A. S. Pease and L. B. Smith.

scarcely distinguishable from authentic Altai and Baikal material, except in their slightly shorter and broader rays. Others again closely match in their angulate-toothed leaves Tiling's original specimens from Ajan (on the west side of Ochotsk Sea) of var. *multicaulis* Herder; while others have the cauline leaves even more developed than in the type of var. *columbiensis*.

In the Newfoundland plant the unexpanded disk-corollas and the outsides of the lobes are deep orange, in the Shickshock plant usually orange-yellow; but in the latter region a single individual was found with both disk- and ray-flowers decidedly reddish. And, as already noted, in the plants of Newfoundland the heads are commonly discoid but sometimes radiate, while in the Shickshock area they are commonly radiate but occasionally discoid. Exactly the same variations of the heads are found in Siberia, Ledebour explicitly saying in his description: "Capitula majora v. minora, saepissime radiata nec nisi rarissime discoidea. Ligulae plerumque aureae variant flavae et licet rarissime rubicundae."[1] In brief, *Senecio resedifolius*, long supposed to be restricted to the region from Alaska across Siberia, is now known in two extremely isolated regions, the Shickshock Mountains of Gaspé and the Long Range of Newfoundland, where in its numerous modifications it not only parallels but seems to exceed the Alaskan and Siberian plant. Miss Brackett's drawings (fig. 1) show only a few of the variations in eastern America.

SENECIO PAUCIFLORUS AND S. INDECORUS.—Two of the most characteristic species of *Senecio* on the Gaspé Peninsula are strikingly different plants which, in his *Monograph of the North and Central American Species of the Genus Senecio*, are treated by Greenman[2] as a single species, *S. pauciflorus* Pursh. One of the plants, true *S. pauciflorus* (fig. 2), is in eastern Quebec confined to the alpine and subalpine chimneys and meadows of the Shickshock Mts. and to the calcareous terraces bordering the Straits of Belle Isle. North of the Straits of Belle Isle it is characteristic of the mountainous region from Cape Mugford to the northern limits of Labrador, while in western America it extends from near the Arctic Circle in Mackenzie, Yukon and Alaska to the mountains of Wyoming and the Yosemite region of California. In the field *S. pauciflorus* is at once distinguished by its thick and fleshy foliage, the few cauline leaves with blunt teeth

[1] Ledebour, Fl. Ross. ii. 632 (1844–46).
[2] Greenm. Ann. Mo. Bot. Gard. iii. 91 (1916).

and lobes; by its comparatively low stature (1 to rarely 5.5 dm.), few (1–6, more rarely –11) broadly campanulate heads with usually purple involucres, and disk-corollas with orange-red or deep-red lobes.

The other species (fig. 3) is the plant figured and described in Britton & Brown, Illustrated Flora, iii. 479, fig. 4042, as *S. discoideus*.[1] This plant should, however, be called *S. indecorus* Greene, since Hooker's *S. aureus*, ϐ *discoideus*, upon which *S. discoideus* rests, proves to be *S. pauciflorus*. Unlike *S. pauciflorus*, *S. indecorus* is not an arctic-alpine plant, but it occurs in the Canadian forest at low levels, from Gaspé County, Quebec to the Lake Superior region and at comparatively low altitudes from southern British Columbia to Idaho and northeastern California. In Quebec, where I have been familiar with the two species for twenty years, *S. indecorus* occurs in thickets and woodland-swamps or on talus and cool ledges of limestone; and in the field it is at once distinguished from the alpine and subalpine *S. pauciflorus* by its thin or membranaceous basal leaves sharply lacerate-pinnatifid and rather numerous cauline leaves, tall stature (up to 9 dm.), more numerous (6–40) slenderly cylindric-urceolate heads with green or merely purple-tipped involucres and yellow flowers.

In *S. indecorus* the filiform tube of the corolla is 3.6–6 mm. long, in *S. pauciflorus* only 3–4 mm.; and in the former the slender, strongly costate achenes (fig. 3d) are 2–3 mm. long, the plumper, less prominently ribbed and darker achenes of *S. pauciflorus* (fig. 2d) being 3–3.5 mm. long. When the heads are quite mature the bracts of the involucre of *S. pauciflorus* (fig. 2c) spread or become only slightly reflexed, exposing a smooth and nearly flat denuded receptacle (fig. 2b), but in *S. indecorus* the mature and narrower bracts (fig. 3c) become strictly reflexed and the convex receptacle (fig. 3b) is conspicuously alveolate, the walls of the pits very thin and jagged or almost fimbriate.

Although the heads of *S. indecorus* are normally discoid, they, like those of *S. pauciflorus*, are sometimes radiate and plants of both forms sometimes occur in the same colonies.[2] These radiate individuals

[1] *S. discoideus* Hook. ex Torr. & Gray, Fl. ii. 442 (1843) is usually cited as *S. discoideus* (Hook.) Britton, l. c. (1898), but the combination was actually published and ascribed to Hooker in 1843.

[2] The character, "discoid" or "radiate," is very unsatisfactory in *Senecio*. In the species of northeastern America the ordinarily radiate *S. aureus* L., *S. Robbinsii* Oakes, *S. pauperculus* Michx., *S. obovatus* Muhl. and *S. resedifolius* Less., in addition to those above discussed, are occasionally discoid.

which occur in Quebec side-by-side with the commoner discoid form of *S. indecorus* are quite inseparable from the type from Idaho and other authentic specimens from British Columbia of *S. Burkei* Greenman, Ott. Nat. xxv. 114 (1911) and Ann. Mo. Bot. Gard. ii. 626, t. 20, fig. 1 (1915); and it is significant that many of the British Columbian localities for discoid *S. indecorus* are identical with those cited by Greenman for *S. Burkei.*

In the development of its foliage *S. indecorus* varies as much as *S. pauciflorus, S. aureus, S. pauperculus* and *S. resedifolius,* the plants showing quick responses to degrees of moisture, exposure and soil-fertility. In different habitats of the same region may be collected specimens with greatly reduced cauline leaves and others with them remarkably dilated. Plants of the latter extreme from Rimouski County, Quebec, are quite inseparable from *S. idahoensis* Rydberg, Bull. Torr. Bot. Cl. xxvii. 183, t. 6, fig. 5 (1900), which Greenman recognizes as a species distinct from *S. pauciflorus. S. idahoensis* has all the technical characters of *S. indecorus,*—membranaceous basal leaves, laccrate-pinnatifid cauline ones, tall stature, numerous heads, slender green involucre, characteristic corolla and achene, and the alveolate receptacle—and the type-number is, except for lack of ligules, a good match for the type of *S. Burkei.* None of the characters of disk-corolla, achene and receptacle are mentioned by those who maintain the distinctness of *S. idahoensis;* but the plant is considered remarkable in having the "stem branched from near the base" and "large broad stem-leaves" (Greenman, Ann. Mo. Bot. Gard. iii. 96). The foliage of the type-number, *Sandberg, MacDougal & Heller,* no. 803, is, as already implied, closely matched by that of luxuriant individuals from eastern Quebec and by the type of *S. Burkei;* but, as shown by the sheet of the type-number of *S. idahoensis* in the Gray Herbarium (one of the sheets cited by Greenman), the basal branching of this Idaho specimen is due to the fact that the primary stem had been broken or bitten off, causing the development of few-headed basal branches.

The type of *Senecio discoideus* is Hooker's *S. aureus,* δ *discoideus* from Fort Franklin in Mackenzie. An excellent photograph of Hooker's type is preserved at the Field Museum of Natural History and I am under obligation to Messrs. D. C. Davies and J. Francis Macbride for an opportunity to examine it. It is certainly not the plant (*S. indecorus*) which has been passing as *S. discoideus* in eastern

America. In the lobing of its leaves the type of *S. discoideus* is like *S. pauciflorus*, but it has broadly deltoid instead of oblong cauline leaves and much more numerous heads than in the typical *S. pauciflorus* of Labrador and Quebec. Material from British Columbia closely approaches the Fort Franklin plant, however, and *S. discoideus* is best treated as an extreme development of *S. pauciflorus*.

Greene's description of *S. indecorus* at once suggests the plant which has been passing as *S. discoideus* and a beautiful photograph of the type which has been generously furnished me by Professor George W. Albertson of the University of Notre Dame settles beyond question this identity.

Briefly summarized the main characters and the bibliography of *S. pauciflorus* and *S. indecorus* are stated below, and a few characteristic specimens are cited.

S. PAUCIFLORUS Pursh, Fl. Am. Sept. ii. 529 (1814); Greenman, Ann. Mo. Bot. Gard. iii. 91 (1916), in part. *S. aureus*, ϐ *discoideus* Hook. Fl. Bor. Am. i. 333 (1834). *S. discoideus* Hook. ex Torr. & Gray, Fl. N. A. ii. 442 (1843), as to type but not description. *S. aureus*, γ *borealis* Torr. & Gr. Fl. N. A. l. c. (1843), in part. *S. Lemberti* Greene, Pittonia, iii. 89 (1896). *S. aureus pauciflorus* (Pursh) Britton in Britton & Brown, Ill. Fl. iii. 480 (1898).—Stems rather stout, 1–5.5 dm. high: leaves thick and fleshy; the basal long-petioled, elliptic to reniform, cuneate to cordate at base, coarsely dentate; the median and upper sessile, 2–5 below the inflorescence, lanceolate, oblong or oblanceolate, with mostly obtuse lobes and coarse teeth: heads 1–6, rarely –11, broadly campanulate, usually discoid; involucres usually purple; the blunt to acute bracts 1–2 mm. broad: corollas with filiform tube 3–4 mm. long; the lobes orange-red to deep-red: achenes dark red-brown, plump, 3–3.5 mm. long: mature involucre rotate or oosely reflexed; denuded receptacle smooth and nearly flat.—Calcareous meadows, alpine slopes and wet rocks, northern Labrador to Matane County, Quebec; Mackenzie, Yukon and Alaska to Wyoming and California. The following are in the Gray Herbarium. LABRADOR: hills back of Okkak, *Moravian Brothers*, August, 1911, *F. C. Hinckley;* Hebron, *Moravian Brothers;* Rama, July, 1894, *J. D. Sornborger*, August, 20–24, 1897, *Sornborger*, no. 67; Mugford, August 14, 1900, *Delabarre;* barrens, Forteau, July 30, 1910, *Fernald & Wiegand*, no. 4172; wet mossy spots, limestone and calcareous sandstone terraces, Blanc Sablon, August 2, 1910, *Fernald & Wiegand*, no. 4173. QUEBEC: shore of Seal Lake, Ungava, August 3, 1896, *Spreadborough*, no. 14,387 in part; little swales near summit of limy ridge, Pointe Jones, Brest, Saguenay Co., July 29, 1915, *St. John*, no. 90,779; alpine and subalpine meadows and calcareous walls, altitude 1000–1200 m., Tabletop Mts., Gaspé Co., many collections in August of

1906 and 1923, *Fernald & Collins*, nos. 261, 263, *Fernald, Dodge & Smith*, nos. 26,109, 26,110; wet hornblende-schist at base of Big Chimney, north slope of Mt. Mattaouisse (called on label "Mt. Logan"), Matane Co., July 22, 1922, *Fernald & Pease*, no. 25,341; schistose talus and wet shelves at base (altitude 400–600 m.) of Big Chimney, Mt. Mattaouisse, July 10, 1923, *Dodge, Griscom & Pease*, no. 26,106; moist rocks and turfy chimneys (alt. about 800–1050 m.), Pease Basin, between Mts. Logan and Pembroke, Matane Co., July 13, 1923, *Pease & Smith*, no. 26,107; moist bushy ta us and mouths of chimneys at about 900–1125 m. alt., Hanging Valley, Mt. Pembroke, July 16, 1923, *Griscom & Pease*, no. 26,108, August 24, 1923, *Fernald & Smi h*, no. 26,111. MACKENZIE: Fort Franklin, *Richardson* (tracing from photograph of *S. aureus* δ *discoideus* Hook.). ALBERTA: Flatts, junction of North Fork and West Branch of Saskatchewan, June 21, 1908, *S. Brown*, no. 1008; Malique Lake, July 8 and 18, 1908, *Brown*, nos. 1173, 1247; Blind Valley and Lakes, alt. 7000–8000 ft., July 6, 1906, *Brown*, no. 414. BRITISH COLUMBIA: below Pipestone summit, July 6, 1904, *J. Macoun*, no. 65,018; upper Spillamacheen Valley, alt 6500 ft., August 3, 1904, *C. H. Shaw*, no. 440; Cornwall Hills, July 28,—*J. McEvoy*, no. 5100; Alberni, Vancouver Island, June 27, 1907, *Rosendahl*, no. 1971. WYOMING: small willows, Middle Ten Sleep Creek, Big Horn Co., August 1, 1901, *Goodding*, no. 465; Little Goose Cañon, Sheridan Co., July 1, 1901, *A. Nelson*, no. 2383. IDAHO: Grand Saline (Salt River?), *Burke*. CALIFORNIA: Yosemite region, 1893, *J. B. Lembert* (*S. Lemberti* Greene); Soda Springs, Tuolumne Co., July, 1894, *Lembert* (distributed by Congdon as C 171).

S. INDECORUS Greene, Fl. Francisc. 470 (1897). *S. discoideus* Hook. ex. Torr. & Gr. Fl. N. A. ii. 442 (1843) as to plant described; Britton in Britton & Brown, Ill. Fl. iii. 479, fig. 4042; not *S. aureus* δ *discoideus* Hook. Fl. Bor.-Am. i. 333 (1834). *S. idahoensis* Rydb. Bull. Torr. Bot. Cl. xxvii. 183, t. 6, fig. 5 (1900); Greenman, Monogr. Senecio, I. Teil, 24 (1901), in Engler, Bot. Jahrb. xxxii. 20 (1902), Ann. Mo. Bot. Gard. iii. 96 (1916). *S. Burkei* Greenman, Ott. Nat. xxv. 114 (1911), Ann. Mo. Bot. Gard. ii. 626, t. 20, fig. i. (1915), ibid, iii. 136 (1916).—Slender, 2–9 dm. high: leaves membranaceous; the basal slender-petioled, oblong, elliptic or ovate, cuneate to subcordate at base, sharply or often incisely toothed or sometimes pinnatifid; the middle and upper usually sessile, 4–11 below the inflorescence, oblong, lanceolate or oblanceolate, incisely and variously cut into sharp teeth or lobes; the uppermost leaves greatly reduced or obsolete; heads 6–40, slenderly cylindric-urceolate (when fresh), discoid or radiate: involucres usually green or merely with purple tips: the acute bracts 0.5–1 mm. broad: filiform tube of corolla 3.6–6 mm. long; lobes yellow: achenes drab or gray-brown, slender, strongly costate, 2–3 mm. long: mature involucre strictly reflexed: denuded receptacle convex, conspicuously alveolate; the walls of the pits very

thin and jagged or almost fimbriate.—Rich thickets, swales and calcareous rock, Gaspé Co., Quebec to the Lake Superior Region; British Columbia to Idaho and northern California. The following are in the Gray Herbarium. QUEBEC: sandy alluvium of Rivière Ste. Anne des Monts, Gaspé Co., August 3–17, 1905, *Collins & Fernald;* clearings and bushy swales along Rivière Ste. Anne des Monts, July 22, 1923, *Fernald, Griscom, Mackenzie & Smith,* no. 26,095; wet calcareous headland by the River St. Lawrence, Grosses Roches, Matane Co., July 17, 1922, *Fernald & Pease,* no. 25,340; openings in Arbor Vitae swamps, Carleton, Bonaventure Co., July 24 and 27, 1904, *Collins, Fernald & Pease;* edge of Arbor Vitae swamp, July 18–21, 1905, *Williams, Collins & Fernald;* dry spruce woods at base of limestone-conglomerate cliffs, Bic, Rimouski Co., July 16, 1904, *Collins & Fernald;* meadows and swamps in slaty region south and east of Bic, July 17, 1907, *Fernald & Collins,* no. 1202 (some heads radiate); dry limestone-conglomerate ledges, south of Bic, July 28, 1907, *Fernald & Collins,* no. 1203; pastures, Rivière du Loup, Temiscouata Co., July, 1913, *Victorin,* no. 40; Roberval, Lake St. John, July 15, 1892, *G. G. Kennedy;* sur les calcaires paléozoiques de l'Ouiatchouan inférieur, Val-Jalbert, Lake St. John, July 22, 1921, *Victorin,* no. 15,436; Spirit Lake (Abitibi), Pontiac Co., July 9, 1918, *Victorin,* no. 8517. MICHIGAN: Champion, July, 1889, *E. J. Hill;* Keweenaw Peninsula, 1863, *Robbins:* Keweenaw Co., July, 1890, *Farwell,* no. 776. BRITISH COLUMBIA: Kicking Horse Valley, alt. 4000 ft., July 15, 1906, *S. Brown,* no. 487a; river-margins, Silver City, August 7, 1885, *J. Macoun;* Griffin Lake, July 6, 1889, *J. Macoun;* Carbonate, altitude 2700 ft., July 7, 1904, *Heacock,* no. 185; Wapta Lake, August 4, 1904, *J. Macoun,* nos. 65,015, 65,020; Skagit Valley, altitude 2500–3000 ft., various dates in July and August, 1905, *J. M. Macoun,* nos. 69,358–65,360; Chilliwack Valley, altitude 3000–4500 ft., various dates, 1901, *J. M. Macoun,* nos. 26,682–26,685; Sophie Mt., altitude 5500 ft., July 17 and 20, 1902, *J. M. Macoun,* nos. 64,990, 64,991; Creston, Kootenay, June 22, 1914, *J. K. Henry,* no. 4; gravel-bed of mountain-stream, Armstrong, July 4,—, *E. Wilson,* no. 247. IDAHO: meadows at Granite Station, Kootenai Co., July 30, 1922, *Sandberg, MacDougal & Heller,* no. 803 (type-number of *S. idahoensis* Rydb.); Forks of St. Mary's River, altitude 1100 m., July 3, 1895, *Leiberg,* no. 1158; Grand Saline (? Salt River, tributary to the Snake), August 16, ——, *J. Burke* (type of *S. Burkei*). WASHINGTON: Big Meadows, Stevens or Spokane Co., August 6, 1902, *Kreager,* no. 428; damp forest, Newman Lake, July 9, 1916, *Suksdorf,* no. 8797; Mt. Constitution, Orcas I., San Juan Islands, August, 1892, *Henderson,* no. 2312, June 25–August 1, 1917, *Zeller,* no. 1252. CALIFORNIA: wet meadows, Pine Creek, Lassen Co., July 9, 1894, *Baker & Nutting* (photograph of TYPE of *S. indecorus*).

Most of the eastern specimens have been distributed as *S. discoideus;* the western as *S. pauciflorus, S. Burkei* and *S. idahoensis.*

Explanation of Plate 144.

Fig. 1[1], *Senecio resedifolius* × 1, from Mt. Pembroke, Matane Co., Quebec, *Fernald & Smith*, no. 26,103; 1[2], from Mt. Fortin, Matane Co., Quebec, *Fernald & Smith*, no. 26, 101; 1[3] and 1[4], from Table Mt., Port à Port Bay, Newfoundland (*S. Fernaldii*), *Fernald & St. John*, no. 10,873; 1a, young plant × 1 from Mt. Fortin, Quebec, *Fernald, Griscom & Mackenzie*, no. 26, 099; 1b, denuded receptacle × 4. Fig. 2, *S. pauciflorus* × 1; 2b, denuded receptacle × 4; 2c, mature involucre × 1; 2d, achene × 4. Fig. 3, upper half of small plant of *S. indecorus* × 1; 3b, denuded receptacle × 4; 3c mature involucres × 1; 3d, achene × 4.

V. NEW OR RECENTLY RESTUDIED PLANTS OF EASTERN AMERICA.

Carex Hostiana DC., var. **laurentiana** (Fernald & Wiegand) Fernald & Wiegand, n. comb. *C. fulvescens* Mackenzie, Bull. Torr. Bot. Cl. xxxvii. 239 (1910). *C. Hornschuchiana*, var. *laurentiana* Fernald & Wiegand, Rhodora, xiii. 130 (1911).

C. Hostiana DC. Cat. Pl. Hort. Bot. Monsp. 88 (1813) was well described and the plate of *C. fulva* Host, not Goodenough, was cited. Although Kükenthal retains for the species the name *C. Hornschuchiana* Hoppe (1824) he definitely cites the perfectly described *C. Hostiana* (as *C. Hosteana*) as a synonym.

We have again studied the plant of Newfoundland and Anticosti and can find no characters not shown by the European *C. Hostiana*, merely a tendency to slightly larger size of the parts; and several European specimens so closely approach var. *laurentiana* that it might be urged with good reason that the variety is scarcely worthy of separation.

Salix Bebbiana Sargent, var. **luxurians** (Fernald), n. comb. *S. rostrata*, var. *luxurians* Fernald, Rhodora, ix. 223 (1907). *S. Bebbiana*, forma *luxurians* (Fernald) Schneider, Journ. Arn. Arb. iii. 75 (1921).

Schneider shows[1] that *Salix rostrata* Thuill. (1797) is not a perfect synonym of *S. repens* L. but that it is identified with two generally recognized varieties of that species and by those who would treat either of these variations as species the name *S. rostrata* Thuill. would have to be used. Under these circumstances the name *S. rostrata* Richardson (1823) for the characteristic American species must give way to *S. Bebbiana* Sargent (1896). Schneider considers var. *luxurians* as "nothing but a forma luxurians," which "should be looked for in other localities of the type." In the vast accumulation of American

[1] Schneider, Journ. Arn. Arb. ii. 68 (1920).

Salix which Schneider studied, however, he saw var. *luxurians* only from the "banks of the St. Lawrence from Rimouski Co. to Gaspé Co.," Quebec. There it is the characteristic extreme of *S.Bebbiana* and on account of its very long capsules (9–12 mm.) and long pedicels (5–8.5 mm.), its plane rather than rugose leaves and its great stature it might almost be considered a species. In *S. Bebbiana* (typical) and *S. Bebbiana*, var. *perrostrata* (Rydb.) Schneider, the mature capsules are usually 5–8 mm. long though in very exceptional specimens they reach 1 cm. and the mature pedicels range from 2–6 mm. in length.

S. Bebbiana var. **capreifolia** (Fernald), n. comb. *S. rostrata*, var. *capreifolia* Fernald, Rhodora, xvi. 177 (1914).

Salix **hebecarpa** (Fernald), n. comb. *S. fuscescens*, var. *hebecarpa* Fernald, Rhodora ix. 224 (1907).

When *S. hebecarpa* was originally published it was taken for an extreme of the Alaskan *S. fuscescens* Anderss. with pubescent capsules and the shrub growing with it but having the capsules glabrous (though the pedicels pubescent) was identified with *S. fuscescens*. Collections made on Mt. Albert in July, 1923 by Messrs. Griscom, Mackenzie, Smith and myself at the type station for *S. fuscescens*, var. *hebecarpa* show that the pubescence of the fruit is by no means constant but in all other characters the Mt. Albert material forms a consistent series; and a second sheet of true Alaskan *S. fuscescens* which has recently come to hand shows that it and the Mt. Albert shrub have quite different leaf-venation, and that the Alaskan shrub has darker scales and smaller capsules. *S. hebecarpa* stands between *S. fuscescens* and *S. pedicellaris* Pursh. From the latter it is separated by its more obovate leaves, the more pubescent and darker scales of the ament, the much shorter, thicker and pubescent pedicels (about equaling to twice as long as the scales), the long nectary and the definite style. The following specimens, all from alpine bogs on Mt. Albert, Gaspé County, Quebec, are representative. The form with glabrous or glabrescent capsule is marked "gl."

August 8–15, 1905, *Fernald & Collins* (gl); July 21, 1906, *Fernald & Collins*, no. 206 (gl), no. 207 (type in Gray Herb.); July 24, 1923, *Fernald, Griscom, Mackenzie & Smith*, no. 25,686 (gl).

Oplopanax horridum (Sm.) Miquel. The Devil's Club is known in our eastern manuals as *Fatsia horrida* (Sm.) B. & H. or as *Echinopanax horridum* (Sm.) Decaisne & Planchon. It seems to be a mono-

typic genus (though the Japanese plant is sometimes separated) clearly distinguished from *Fatsia*, and by the International Rules of Botanical Nomenclature its name should be *Oplopanax horridum* (Sm.) Miquel. *Echinopanax* Decaisne & Planchon, Rev. Hort. Sér. 4, iii. 105 (1854) was started as a genus merely by the statement, "Un autre type très remarquable (*Echinopanax* Nob.) est fourni par le *Panax horridum*." Absolutely no differential character was given by which any one else could tell on what points *Echinopanax* rested as a genus; that highly important detail being left for others to struggle with, they, if successful, giving the credit for the solution to the authors who had not taken sufficient pains themselves to point out the differential characters. The International Rules wisely exclude these names, the authors of which, to use the slang of the day, "pass the buck," stating (Art. 38) that "The mere indication of species as belonging to a new genus or of genera as belonging to a higher group, does not allow us to accept the genus or group in question as characterized and effectively published." The American Rules, however, accept such irresponsible publication and by that code *Echinopanax* is a properly published genus. So far as a prolonged search has revealed, the first satisfactorily published generic name for the Devil's Club is *Oplopanax* Miquel, Ann. Mus. Bot. Lugd.-Batav. i. 16 (1863), which was based upon Torrey & Gray's *Panax* § *Oplopanax*, a section set off by them with a real characterization.

Nelson & Macbride, Bot. Gaz. lxi. 45 (1916), have revived the name *Ricinophyllum* and have made the combination *R. horridum* (Sm.) Nelson & Macbr.; but a moment's examination of the original publication would have shown that *Ricinophyllum* was merely indicated in synonymy as an herbarium-name found on an old sheet of *Panax horridum* Sm. The name *Ricinophyllum*, therefore, has no nomenclatorial status.

HACKELIA DEFLEXA (Willd.) Opiz, var. **americana** (Gray) Fernald & Johnston, n. comb. *Echinospermum deflexum*, var. *americanum* Gray, Proc. Am. Acad. xvii. 224 (1882). *Lappula deflexa*, var. *americana* (Gray) Greene, Pittonia, ii. 183 (1891). *L. americana* Rydb. Bull. Torr. Bot. Cl. xxiv. 294 (1897).

When the genus *Hackelia* was recently taken up [1] the American plant was merged with the European since the character relied upon by Gray in separating it, namely, the presence of a few prickles on

[1] Johnston, Contrib. Gray Herb. n. s. No. lxviii. 43–48 (1923).

the back of the fruit, was found to be very inconstant. Recent examination of the American material, however, shows that it differs from the European in having the leaves elliptic-lanceolate or narrowly ovate and acuminate, the leaves of the European type being spatulate-oblanceolate. In the latter plant the back of the fruit is deltoid-ovate; in the American plant more definitely deltoid. Typical *L. deflexa* extends eastward into China while var. *americana* is present in Amur (*Maximowicz*).

AGOSERIS **gaspensis**, spec. nov., perennis; foliis lineari-lanceolatis flaccidis integris vel remote pinnato-incisis glabris basi ciliatis; scapo deinde folia superante apice villoso; involucri bracteis lanceolatis attenuatis 1.5–2 cm. longis, exterioribus viridibus apice recurvatis basi valde villoso-ciliatis, ciliis 1–2 mm. longis, bracteis interioribus scariosis valde purpureo-maculatis; floribus aeneis; pappo albo deinde 1.2–1.5 cm. longo, setis minute serrulatis: achenio lineari-fusiformi 7–9 mm. longo glabro, rostro 5–7 mm. longo firmo vix filiformi glabro. —Tabletop Mountains, Gaspé County, QUEBEC: dry stony subalpine meadows, at 1100–1200 m. altitude, east of Lac Perrée, August 14, 1923, *M. L. Fernald, C. W. Dodge, & L. B. Smith*, no. 26,119; alpine and subalpine meadows and brooksides, northern and northeastern slopes (alt. 950–1300 m.) of Mt. McNab, August 7, 1923, *Fernald, Dodge & Smith*, no. 26,120 (TYPE in Gray Herb.); subalpine meadows on southern slope (alt. about 1200 m.) of Mt. Au Clair, August 10, 1923, *Fernald & Smith*, no. 26,121.

Strongly simulating *Agoseris gracilens* (Gray) Kuntze of the region from southern Alberta and British Columbia to Wyoming, Utah, Nevada and northern California. That species, however, as shown by Gray's original material of *Troximon gracilens*, has the body of the achene only 5–7.5 mm. long and hispid at summit (in *A. gaspensis* 7–9 mm. long and glabrous); the delicate filiform beak 6–8 mm. long (the stouter and firm beak of *A. gaspensis* 5–7 mm. long); and the mature pappus only 8–10 mm. long (in *A. gaspensis* 1.2–1.5 cm. long). Furthermore, in *A. gracilens* the disk at the tip of the beak is about 0.5 mm. in diameter, in *A. gaspensis* nearly twice as broad.

A. gaspensis is of peculiar interest because it is the first member of this predominantly cordilleran genus to be found in the Shickshock Mountains, a region in which the cordilleran relationship is very pronounced and already well known through such plants as *Polystichum mohrioides*, var. *scopulinum* (D. C. Eaton) Fernald (discussed on p. 89), *Salix brachycarpa* Nutt., *Dryas Drummondii* Richardson, *Lonicera involucrata* (Richardson) Banks, and hundreds of others.

The genus which was long called in America and which is maintained by Dalla-Torre & Harms as *Troximon* Nutt. should be known as *Agoseris* Raf. The question was cleared by Greene in 1891,[1] but more recently Hall,[2] who has been followed by other western botanists has urged the retention of *Troximon* in the following words.

"The reinstatement of the genus Agoseris Raf. (1817) has been proposed for those species of Troximon in which the achenes are beaked. But the two groups are best received into one genus, being connected by the thick-beaked *T. glaucum*. Troximon was first used as a generic name by Gaertner (1791) but since his genus is not sustained, we may properly write Troximon Nutt. (1813) as the name of the present group."

In Hall's argument several fundamental facts seem to have been overlooked. In 1791 Gaertner[3] published *Troximon* as a genus based upon three Linnean species of *Tragopogon*, *Trag. Dandelion*, *T. virginicum* and *T. lanatum*. The three species were, according to *Index Kewensis*, formally named *Troximon Dandelion*, *T. virginicum* and *T. lanatum* by F. W. Schmidt in 1795 and they were certainly described under these binomials by Persoon in 1807. The first two are species of *Krigia* Schreber (1791), belonging to the subgenus *Cynthia* (D. Don) Gray, which is often maintained as a distinct genus *Cynthia* D. Don (1829).[4] The third species, *Trox. lanatum*, is generally referred to *Scorzonera* L. (1753). By whichever principle we reason, whether we typify *Troximon* Gaertn. by its first species, by the greater number of species or by the exclusion from it of the species (*T. lanatum*) which belongs to the earlier-published *Scorzonera*, we arrive at the same conclusion, that

TROXIMON Gaertn. (1791) = CYNTHIA D. Don (1829) and should be used by those who maintain *Cynthia* as generically distinct from *Krigia* Schreb. (1791). Whether *Krigia* (1791) has priority over *Troximon* (1791) I have as yet been unable to determine.

Hall, apparently considering Troximon Gaertner as a "genus . . . not sustained" would retain "Troximon Nutt. (1813)." But what was *Troximon* Nutt. (1813)? The reference ordinarily given is to Nutt. in Fraser's Cat. nos. 83 and 84. Fraser's *Catalogue*

[1] Greene, Pittonia, ii. 176 (1891).
[2] Hall, Univ. Cal. Pub. Bot. iii. No. 1: 276 (1907).
[3] Gaertn. Fruct. ii. 360 (1791).
[4] D. Don, Edinb. New Phil. Journ. vi. 309 (1829).

was merely a list of names and the complete treatment under nos. 83 and 84 was as follows:

"83* Troximon ciliatum. ‡ M.
84* ————————glaucum. ‡ M."

This certainly does not constitute satisfactory publication of a genus. The next reference commonly given is to Pursh, Fl. Am. Sept. ii. 505 (1814). But Pursh gave absolutely no generic diagnosis and ascribed the genus without question to Gaertner and to Persoon. That Pursh had no thought of setting up a new genus is perfectly evident from the fact that he has two species, *T. glaucum* which is an Agoseris, and *T. virginicum* which was one of the original species of *Troximon* Gaertn. Nor did Nuttall in his Genera, ii. 127 (1818) indicate any intent to set off a new genus *Troximon* as distinct from Gaertner's genus; for he ascribed *Troximon* directly to Gaertner and he so far accepted Gaertner's definition as to include the oriental *T. lanatum* which belongs to the genus *Scorzonera*.

In 1817 Rafinesque properly published *Agoseris*[1] and again, in 1819,[2] he gave a good characterization of the genus. There is no question, then, that AGOSERIS Raf. (1817) is the correct name for the genus which still passes erroneously as *Troximon* "Nutt.," and that TROXIMON Gaertn. (1791) is the correct name for *Cynthia* D. Don (1829).

NOTES ON SOME RHODE ISLAND AND SOUTHEASTERN MASSACHUSETTS PLANTS.

S. N. F. SANFORD.

GLAUCIUM FLAVUM Crantz. (*Glaucium luteum* Scop.) The Great-horned Sea-poppy, an introduced plant of somewhat rare occurrence and brief residence, is appropriately named because its mature pods are nearly a foot long and its usual habitat is on sea cliffs or in the beach shingle along salt rivers. Even when found in other waste places the locality is generally near the coast.

Early botanists reported[3] stations on Conanicut Id., Prudence Id., and Portsmouth, R. I., and the writer has collected the plant on the ocean bluffs at Seaconnet Pt., Little Compton, R. I., at Mt.

[1] Raf. Fl. Ludov. 58 (1817).
[2] Raf. Journ. de Phys. lxxxix. 100 (1819).
[3] Proc. Newport (R. I.) Nat. Hist. Soc., 1885–6, p. 5, 13.

Hope, Bristol, R. I., and on Lee's River beach, in the town of Somerset, Mass. Mr. E. W. Hervey records[1] the species in waste places, vicinity of New Bedford, Mass.

HELIANTHUS MOLLIS Lam. Two additional stations for this plant, which the writer first reported[2] from Fall River, Mass., in 1904, indicate the probable establishment of this distinctive and handsome sunflower. One of the newer colonies, observed for several successive years in the sterile soil of a farm, is increasing in size and blooms late into the fall. The other, merely a patch in a woodland cart path, was without flowers when discovered. Both stations are within the Fall River city limits, but there is probably no connection between the colonies as they are two and five miles respectively from the group first seen.

RANUNCULUS ALLEGHENIENSIS Britton. When attention was called to the distinction between *Ranunculus abortivus* L. and *Ranunculus alleghaniensis* Britton, botanists naturally hastened to examine their collections and to observe more carefully in the field the plants which had been passing as *R. abortivus*. While both species occur in the area covered by this article, *R. abortivus* is, apparently, the prevailing plant. Passing northward, *R. alleghaniensis* appears in several places in Berkley, Mass., while nearer Boston (at Canton Junction, for example) this species seems to predominate. At Lincoln, R. I., it is not uncommon.

CELTIS OCCIDENTALIS L. The presence of the Sugarberry or Hackberry in isolated groups, nearly always on river banks or in undeveloped, rocky pastures adjoining, suggests that this plant is native here. The species is represented in Fall River, Dighton, Somerset and Swansea, Mass., and in Warren and Bristol, Rhode Island. Specimens with pubescent branchlets indicate at least an approach to var. *crassifolia* (Lam.) Gray.

CONOPHOLIS AMERICANA (L. f.) Wallr. This plant, although rather widely distributed, is sufficiently rare and local to be worth noting. One might botanize for years without seeing it. Swampy woods, or rich soil in shaded places furnish the preferred habitat. Specimens from Fall River and Freetown, Mass., and from Tiverton, R. I., have been collected or seen by the writer.

ACER SACCHARUM Marsh. The sugar maple as a native is rare in southeastern Mass., but, intermingled with red maples and large

[1] Flora of New Bedford and the Shores of Buzzards Bay, 1911, p. 53.
[2] RHODORA, vi. 1904, pp. 88–89.

oaks, in Swansea, are numerous trees of this species which are probably native, as they are a long distance from any road or yard from which they might have originated, even if there were evidence of parents in the neighborhood. The trees are tall and rather slender, indicating that they have struggled upward in competition with the surrounding growth, much of which must be over fifty years of age.

A very large sugar maple in Fall River, about seventy-five years old, is known to be a seedling from what is supposed to have been a native parent.

POLYGONUM VIRGINIANUM L. Although southern New England is well within the range of this knotweed, the species appears to be somewhat rare and certainly local. For many years a colony in the town of Somerset, Mass., not only persisted but spread rapidly in several shaded ditches along wooded roadsides. Specimens from Lincoln, R. I., have also been collected by the writer.

HIERACIUM FLORENTINUM All. A vigorous growth of this hawkweed, too common in Canada and eastern Maine, was observed near East Greenwich, R. I., and specimens collected in the late summer of 1923. The plants were probably introduced with seed in a grain field.

ILEX OPACA Ait. While this species is known to grow tall, it is not usual to find very large trees in the southeastern corner of New England. In the town of Little Compton, R. I., however, there is a piece of swampy woodland which contains numerous trees 20 to 30 or more feet high, many of them of large diameter, and some with divided trunks. One tree measured thirty-one inches in circumference. The stump of another holly, in a Westport, Mass., swamp, was more than two feet across, indicating the size which this *Ilex* has, in the past, attained. *Ilex opaca* with berries, although appearing in the market at Christmas time, is becoming rare.

NYSSA SYLVATICA Marsh. Fruiting specimens of this polygamo-dioecious tree are rare in the section treated. This is noteworthy, as the Tupelo is of frequent occurrence throughout, often reaching considerable size. Another peculiarity, well known and without special significance, is the occasional presence of angularly lobed or toothed leaves, instead of the usual obovate, entire-margined blades. In such cases there are generally two large teeth or "shoulders" on each side of the leaf.

BOSTON, MASSACHUSETTS.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLVII.

COMPOSITÆ.

LAPSANA.

L. COMMUNIS L. Waste places in dry soil; frequent in Boston and immediate vicinity, rare elsewhere.

LEONTODON.

L. AUTUMNALIS L. Fields, lawns and waste places, very common throughout.

L. AUTUMNALIS L., var. PRATENSIS (Link) Koch. Rare, Andover, Brighton, Dorchester, Milton, Canton, Hanson.

LEPACHYS.

L. PINNATA (Vent.) T. & G. Rubbish heap, Cambridge (*W. Deane*, Aug. 5, 1886). Specimen in herb. W. Deane.

[*L. columnaris* T. & G. is reported by C. W. Jenks in RHODORA XXV. 68, 1923, as a waif at S. Billerica, but no specimen is available.]

LIATRIS.

L. PYCNOSTACHYA Michx. Dump from garden, Milton (*N. T. Kidder*, Aug. 23, 1920).

L. scariosa Willd. Dry sandy soil; frequent.

L. SPICATA (L.) Willd. Lawrence (*S. Watson*, 1877).

LAYIA.

L. PLATYGLOSSA Gray. Woolwaste, N. Chelmsford (*W. P. Alcott*, July 4, 1879). Specimen in herb. Peabody Acad. Sci. Adventive from California.

MATRICARIA.

M. CHAMOMILLA L. Somerville (*C. E. Perkins*, August, 1881). Specimen in herb. N. E. Botanical Club.

M. INODORA L. Waste places; Andover (*A. S. Pease*, July 22, 1902); Marblehead (*C. E. Faxon*, June 24, 1890).

M. INODORA L., var. SALINA (Wallr.) DC. RHODORA xi. 239–240, 1909. Made land near sea, S. Boston (*W. P. Rich*, Sept. 15, 1901,

others to 1911); Boston (*C. E. Perkins*, 1882). Adventive from saline regions of Europe.

M. SUAVEOLENS (Pursh) Buchenau. Roadsides, dooryards and waste places, frequent.

MEGALODONTA.

M. Beckii (Torr.) Greene. (*Bidens Beckii* Torr. See Pittonia iv. 271, 1901). Ponds and slow streams; well distributed except in southeastern towns.

MICROSERIS.

M. DOUGLASII Gray. Woolwaste, N. Chelmsford (*W. P. Alcott*, 1878). Specimen in herb. Peabody Acad. Sci.

MIKANIA.

M. scandens (L.) Willd. Rich soil along watercourses; frequent and usually abundant.

ONOPORDUM.

O. ACANTHIUM L. Dry soil in waste places, occasional.

PALAFOXIA.

P. TEXANA DC. Banks of Merrimac River, Tyngsboro (collector unknown, October, 1896). Specimen in herb. N. E. Botanical Club. Native in Texas and Mexico.

PARTHENIUM.

P. HYSTEROPHORUS L. Dump, Lowell (*C. W. Swan*, Sept. 11, 1881); waste from mills, Malden (*F. S. Collins*, Aug. 2, 1890). Adventive from the west.

PETASITES.

P. palmatus (Ait.) Gray. Purgatory swamp, Norwood (*H. A. Young*, May 30, 1878; other collectors since); swamp, Franklin (*S. Harris*, June 17, 1897).

P. VULGARIS Hill. Vacant lot in wet soil, Audubon Road and Brookline Ave., Boston, abundant for several years, now gone; also escaped in Brookline and Dorchester. Native of Europe.

PICRIS.

P. HIERACIOIDES L. Grassland, S. Hanover (*E. A. Josselyn*, June 28, 1905). Specimen in herb. Gray.

PLUCHEA.

P. camphorata (L.) DC. Salt and brackish marshes from Ipswich south along the coast. The station at Ipswich (*A. P. Morse*, Sept. 2, 1921) is the northernmost limit of this species so far as known.

PRENANTHES.

P. alba L. Woods and open places, frequent north and west of Boston.

P. altissima L. Rich woods, occasional, from Blue Hills north and west.

P. altissima L., forma **hispidula** Fernald. See RHODORA xxiii. 300 (1922) 1921. Occasional, range of type.

P. serpentaria Pursh. Dry soil and open woods, apparently frequent except in southern and extreme northern towns.

P. trifoliolata (Cass.) Fernald. Woods and fields, very common throughout.

C. H. KNOWLTON
WALTER DEANE
Committee on Local Flora.

The date of the May issue (unpublished as this goes to press) will be announced later.

A. E. Brackett del

FIG. 1, SENECIO RESEDIFOLIUS. FIG. 2, S. PAUCIFLORUS. FIG. 3, S. INDECORUS.

RHODORA

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Rhodora

JOURNAL OF

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Vol. 26. July, 1924. No. 307.

OROBANCHE RAMOSA ON A COLEUS.

W. C. Muenscher.

(Plate 145.)

Some time ago I received a package of plants for identification. These specimens were gathered on February 4, 1924, by a *Coleus* grower in his greenhouses in Flushing, Long Island, New York. In his accompanying letter it was stated that, "These sucker plants are a menacing weed in the greenhouses . . . If one of the sucker plants is pulled up, without removing all its roots in contact with the *Coleus* plant, within a month's time it reproduces tenfold in the same place."

An examination of the contents of the package revealed several plants of branched broom-rape, *Orobanche ramosa* L., belonging to the *Orobanchaceae*, a family of parasitic phanerogams. The collection contained several fine plants with well developed flowers and fruits as well as several younger plants some of which were still growing on the roots of stunted and partly dead Coleus plants. Because of the unusual occurrence of this parasite, an examination was made of the available literature on *Orobanche*, but no record could be found of *O. ramosa* L. occurring as a parasite on Coleus in this country, nor on any other host in New York State. According to Garman (2) *Orobanche ramosa* L. is common on hemp, *Cannabis sativa* L., and tobacco, *Nicotiana Tabacum* L., in Kentucky, and has been reported on tomato, *Lycopersicum esculentum* L., in New Jersey. Koch (3), in Europe, reported *O. ramosa* L., on a number of hosts, including *Coleus Blumei* Benth. Beck (1) reported it as a parasite on 35 hosts belonging to a number of widely separated families, especially Solanaceae, Urticaceae, Labiatae, and Compositae.

Dr. R. J. Haskell informed me that the files of the Plant Disease Survey Office contain no record of *Orobanche ramosa* L. on *Coleus*, nor does the herbarium of the Pathological Collections in the Bureau of Plant Industry contain any specimens of it. The only specimens of *Orobanche ramosa* L. in the Gray Herbarium[1] are those on hemp, or those with no host reported, from Illinois and Kentucky. This species is represented in the National Herbarium[2] by specimens on hemp from Kentucky, Illinois, and California and specimens on tobacco and tomato from Kentucky.

According to Gray's Manual, *Orobanche ramosa* L. has been introduced from Europe. Garman (2) states that it was probably imported from China with hemp seeds. The seeds are very small and are known to have kept their vitality for 13 years while lying in the soil, Garman (2). Immediately after germination the seedlings attach themselves to the roots of the host plants. It is possible that the infestation of *O. ramosa* L. on Long Island may have originated from seeds that have been introduced recently. However, it is also possible that this parasite has been growing unobserved on other hosts in the same vicinity and that the seeds were brought into the greenhouse with soil or mulch.

The purpose of this note is to record the occurrence of *Orobanche ramosa* L. on *Coleus* which is interesting not only because of its rarity but also because of the damage it was doing on *Coleus* in the greenhouses. Apparently this is the first record of its occurrence on *Coleus* in North America. The determination of the specimens was verified by Dr. K. M. Wiegand, and specimens have been deposited in the herbarium of Cornell University and also in the National Museum.

CORNELL UNIVERSITY.

CITATIONS.

1. **Beck, Günther, Ritter von Mannagetta.** Monographie der Gattung Orobanche.
Bibliotheca Botanica **19:** 1–275; PL. 1–14; FIG. 1–11; 1890.

2. **Garman,** H. The Broom-rapes.
Ky. Agric. Exp. Sta. Bul. **105:** 1–32; FIG. 1–15. 1903.

3. **Koch, L.** Die Entwicklungsgeschichte der Orobanchen. 389 pp. Pl. 1–12. Heidelberg, 1887.

[1] Courtesy of Mr. A. S. Foster.
[2] Courtesy of Mr. G. H. Martin.

EXPLANATION OF PLATE 145.

Coleus plant parasitized by *Orobanche ramosa* L. FIG. 1, *Coleus* plant; figs. 2, 3, and 4, very small *Orobanche* plants attached to *Coleus* roots; fig. 5, a small flowering plant of *Orobanche*; fig. 6, a larger detached *Orobanche* plant not fully developed. Natural size.—Photo by W. R. Fisher.

EXTENSIONS OF RANGE AND A NEW VARIETY IN SALIX.

CARLETON R. BALL.

OUR knowledge of the distribution of species, and of their numerous variations increases steadily. Amateur, subprofessional and professional botanists all have contributed largely to this result. The writer has been most fortunate in having had opportunity to study and identify many of the willow collections from all classes of botanists in the United States and Canada. This has given rise to a series of papers[1] describing new species and varieties, and recording extensions of range.

In the third[2] of these papers the willows of the Black Hills of South Dakota were discussed chiefly in the light of recent collections made by John Murdoch, Jr., T. C. Setzer, and N. E. Petersen, of the U. S. Forest Service. Of the 12 species listed, the one recorded as *S. fluviatilis* Nutt. is *S. interior* Rowlee, the Nuttall plant being confined to the lower Columbia River.[3]

In addition to the 12 species recorded for the Black Hills district, *cordata* occurs in the eastern portion of the State. To these 13 species, the present paper adds to the known flora of South Dakota 3 species, *missouriensis*, *petiolaris* and *candida*, and a new variety of *discolor*. This makes a total of 16 species of Salix recorded for the State.

[1] Ball, Carleton R. Notes on North American Willows I–III. Bot. Gaz. **40**: 376–380, pls. 12–13, 1905; ibid. **60**: 45–54, figs. 3, 1915; and ibid **60**: 391–399, 1915, respectively.

————Undescribed Willows of the Section Cordatae. Bot. Gaz. **71**: 426–437, fig. 1, 1921.

————Notes on Willows of the Sections Pentandrae and Nigrae. Bot. Gaz. **72**: 220–236, figs. 1–4, 1921.

————and Kirk Whited. Pruinose Branchlets and Salix lemmoni Bebb. Am. Jour. Bot. (in press). 1923.

[2] Bot. Gaz. **60**: 391–399, 1915.

[3] Ball, Carleton R. Notes on North American Willows II. Bot. Gaz. **60**: 52–54, 1915.

A New Variety of Salix discolor from South Dakota.

At the juncture of Minnesota, South Dakota, and North Dakota is a district very interesting geologically and botanically. It was once the scene of great glacial activity. In general, it lies between the Dakota and Minnesota lobes of the Wisconsin glaciation.

Topographically this district may be separated into 3 fairly distinct parts, namely, (1) the trough, occupied by Big Stone and Traverse Lakes, which lies on the boundary line between Minnesota and the Dakotas, at an elevation of about 1,000 feet above sea level; (2) the gently sloping plain which lies directly west of the trough and reaches an elevation of 1200 to 1300 feet on its western edge, and (3) the rough and dissected morainal hills which extend north and south, forming the western boundary of the plain some 10–15 miles west of the lakes, and extending a little way into North Dakota. These hills, known as the Sisseton Hills, probably reach an elevation of nearly or quite 2,000 feet at the highest points. Beyond these hills, the higher plains stretch away to the westward.

This district is made interesting also by another topographic fact. Big Stone and Traverse Lakes lie end to end in a curved glacial valley. They are separated only by a low ridge or moraine a few miles wide lying transversely across the valley floor. In spite of this proximity and slight separation, however, they belong to entirely different drainage systems.

Big Stone Lake drains through the Minnesota River to the Mississippi and thence to the Gulf of Mexico and the Atlantic. Traverse Lake is drained by the Red River of the North to Lake Winnipeg and thence to the Arctic.

From these facts it follows that these lakes lie on the "Height of Land" of the old geographies, which separates the Arctic and Mississippi drainage basins. Furthermore, they are about 300 miles south of the Canadian line. As the Missouri River enters North Dakota far to the northwest and not far from the Canadian line, and as the Mississippi River rises far to the northeast in Minnesota it is seen that Traverse Lake occupies the southern apex of a triangle of Arctic drainage projecting far south into Mississippi Basin drainage.

The Red River has its source in Traverse Lake but the Minnesota River does not rise in Big Stone Lake. Its sources are 10 to 15 miles northwestward in the Sisseton Hills, previously described. The abrupt eastern face of this low range is cut by numerous deep,

rocky, timbered coulees or cañons, which contain the headwaters of the Minnesota River.

Through the courtesy of Prof. W. H. Over, of the University of South Dakota, the writer was privileged to join a party from that institution which was collecting in this district in the summer of 1923. Though it was possible to remain for only three days, the trip was well repaid.

The flora of the wooded eastern escarpment of the Sisseton Hills, and of the deep rocky coulees that issue from it, is largely an eastern flora. Among the plants are the sugar maple, bur oak, American and beaked hazelnuts, blue cohosh, and many others.

The willows of this district are no less interesting than the other plants. The abundant occurrence here of *S. missouriensis* Bebb, far to the north of its previously accepted range, is discussed elsewhere in this paper. There seems to be a general tendency toward the production of broad-leaved forms. These were collected in the glacial trough occupied by Big Stone and Traverse Lakes, and also in the coulees of the Sisseton Hills, but not in the plain between. Such amplification of the foliar organs was found in four out of seven species collected. No specially large-leaved plants of *S. interior* Rowlee, *S. cordata* Muhl., or *S. missouriensis* were noted.

One plant (*Ball* 2214) of *S. amygdaloides* And., in a group of several plants on the ridge between the lakes, had ovate leaves, a form collected previously by the writer at Cottonwood, South Dakota, west of the Missouri River. One plant of *S. lutea* Nutt. (*Ball & Over* 2232), out of several seen in a coulee in the Sisseton Hills, had ovate leaves very suggestive of *S. lutea platyphylla* Ball from the Wahsatch and Great Basin sections. Of *S. bebbiana* Sarg., only a single plant was seen, in a coulee, but it (*Ball & Over* 2230) has rather large obovate-oval leaves, quite different in shape from those of the normal plant of this species. Finally, a very broad-leaved form of *discolor* is here described as a new variety.

SALIX DISCOLOR **overi** Ball n. var. Tree up to 8 inches in diameter and 15–20 feet tall; branchlets short and divaricate, the bark dark brown, reddish brown or sometimes yellowish, not shining, glabrous or the most recent growth slightly puberulent, usually wrinkled longitudinally; stipules none or, on sprouts, 2–7 mm. long, subreniform to semicordate, acute denticulate, often deciduous; leaves broadly elliptical to oval or broadly obovate, on flowering or fruiting branches mostly obovate, subremotely and coarsely or shallowly crenate-serrate

commonly 2.5 × 4, 3–3.5 × 5–6, 4 × 7–8, and 4.5 × 7 cm., or on sprouts 3 × 8, 4 × 10, and 5.5–6 × 11–12 cm., acute or subcuneate at base, short-acuminate from an acute apex or cuspidate from a broadly acute to obtuse apex, dark green above, subglaucous to glaucous beneath, the yellowish-brown midrib and slender lateral veins plane or slightly elevated above, rather strongly elevated beneath, glabrous throughout, or thinly pubescent with shining hairs while unfolding.

Pistillate aments subsessile, with 1–3 small bract-like leaves at base, 5–6 cm. long; mature capsule conic-rostrate, 9–11 mm. long; pedicels 1–2 mm. long; style nearly or quite 1 mm. long; stigmas divided, 0.5 mm. long.

Variety *overi* is distinguished from the typical form of the species chiefly by the larger, obovate or broadly oval leaves and perhaps by longer styles also, though the paucity of material makes this uncertain.

A study of 121 sheets of *S. discolor* Muhl. in the herbarium of the writer and of 135 specimens in the U. S. National Herbarium fails to discover any other collections which are referable to this variety. Several sterile specimens collected by the writer in the southern parts of Vermont and New Hampshire approach it somewhat in the shape and size of the leaves. The following specimens represent this variety:

SOUTH DAKOTA: Roberts Co., west shore of Big Stone Lake, at Hiawatha Beach, *W. H. Over* 14483, Aug. 12, 1922 (fol.), May 21, 1923 (fruit); *C. R. Ball & W. H. Over* 2238, Aug. 9, 1923 (fol.), (both numbers from same plant and therefore type specimens). Traverse Lake, inside wire fence below the spring on Sisseton road, 2 miles northwest of Brown's Valley, Minn., *C. R. Ball & W. H. Over* 2249, Aug. 10, 1923 (foliage and old staminate aments).[1]

The type tree is in an old channel on the left (west) of the road at Hiawatha Beach, just before it turns west to Art Lake's house, which stands several rods farther west. It consists of an old prostrate trunk about 8 inches in diameter, partly buried in the mud, and bearing stout branches about 4 inches in diameter, rooted at the base, and reaching a height of 12–15 feet.

Salix discolor (*Ball & Over* 2236, 2237) was abundant in the swampy ground nearby and one plant of *S. missouriensis* Bebb was nearby

[1] *Over* No. 14483 is in herbaria Ball and Univ. So. Dak.; *Ball & Over* Nos. 2238 and 2249 have been deposited in herbaria Ball, Can. Geol. Surv., Cornell Univ., Field Museum, Gray, Ia State Coll., Minn. Univ., Mo. Bot. Gard., Rocky Mt. (Wyo.), So. Dak. Univ., and U. S. Nat. No. 2238 has been placed also in the herbaria of Calif. Acad. Sci., N. Y. Bot. Gard , No. Dak. Agric. Coll., So. Dak. Agric. Coll., and Stanford Univ.

(*Ball & Over* 2240). *Cornus stolonifera* Michx. was common in the immediate vicinity, as were also such grasses as *Agrostis palustris* Huds., *Poa palustris* L., and *Panicularia nervata* (Willd.) Ktze.

Salix missouriensis in South Dakota.

Salix missouriensis Bebb[1] was first described by Andersson as *S. cordata vestita* from a specimen collected by the Duke of Neuwied near Fort Osage on the Missouri River. The recent manuals of botany do not give it an extensive range. Gray's New Manual[2] says "Mo. to Nebr. and I. T.," while Britton and Brown,[3] and Britton[4] say "Mo. and Nebr." The writer[5] in 1899 recorded its occurrence in eastern Iowa, near Muscatine and Davenport, and at Sioux City in Northwestern Iowa.

Material in various herbaria shows the species to be distributed in Missouri and the eastern parts of Kansas and Nebraska, and along the Missouri River in Iowa as far as Sioux City. Typical material collected by E. J. Palmer in extreme southern Illinois is in the National and Arnold Arboretum herbaria. Sterile specimens from Jo Daviess County in northwestern Illinois almost certainly belong here. Sioux City, Iowa, has been the northwestern limit of its recorded range.

In 1922 and 1923, Prof. W. H. Over, of the University of South Dakota, collected willows in the southeastern part (Clay Co.) and in the northeastern part (Grant, Day, and Roberts Cos.) of the State, and sent them to the writer for identification. Inspection of this material, mostly foliage specimens, showed that it represented *missouriensis* rather than *cordata*, though it was far to the north of the accepted range of *missouriensis*.

Early in August, 1923, the writer had the opportunity to join Professor Over for a short time in an exploration of the eastern portion of Roberts County, South Dakota. A study was made of the willows (1) along the west shore of Big Stone Lake, (2) near the south end of Lake Traverse, and (3) in the coulees of the Sisseton Hills, some 5 miles west of Sisseton, the county seat of Roberts County. Here the most abundant species of the *cordata* group was *S. missouriensis*, previously collected in Roberts County in 1922 by Professor Over.

[1] Andersson, N. J. Kongl. Vet.-Akad. Handl. **6:** (Monog. Sal.) 159, 1867.
[2] Robinson, B. L., and M. L. Fernald. Gray's New Manual Bot. 323 1908.
[3] Britton, N. L., and Addison Brown. Illus. Flora **1:** 503, 1896.
[4] Britton, N. L., Man. Bot. 314–315, 1901.
[5] Ball, Carleton R. The Willows of Iowa. Proc. Ia. Acad. Sci. **7:** 153, pl. 12, 1900

Along the parts of Big Stone and Traverse Lakes visited, *S. missouriensis* was practically the only species of the *cordata* group present. A single plant of *cordata* was found at a large spring beside the Sisseton road about 2 miles northwest of Brown's Valley, Minn., and near the south end of Lake Traverse. In the coulees of the Sisseton Hills, however, some 12–15 miles to the northwest, at elevations several hundred feet higher, *S. missouriensis* was associated with *S. lutea* Nutt., the latter species being fairly common there.

Salix missouriensis Bebb differs from *S. cordata* Muhl. chiefly in the larger size, the more densely pubescent or tomentose one-year branchlets, the densely tomentose or pilose bud-scales, pubescent petioles, and the usually larger leaves, more distinctly glaucous underneath, with midveins pubescent in the basal portion of the leaf both above and below. The furry bud-scales are especially striking at nearly all seasons of the year. A dense coma occurs at the base of the aments and newly developing vegetative shoots. It is composed of long white hairs from 2 to 4 mm. long. This coma seems to be longer and much more abundant than in *S. cordata* and often is quite prominent on young growth. The aments on the only fruiting specimen (*Over* 14482A of 1923) apparently have been injured by frost and are of little diagnostic value.

The following South Dakota specimens in the herbarium of the writer are referred to *S. missouriensis*. Most if not all of these also are in the herbarium of the University of South Dakota at Vermillion, and those collected by Ball and Over are being distributed to several herbaria.

Clay Co., Vermillion, *Over* 13830, Oct. 12, 1922; Grant Co., Southshore, *Over* 15447, July 17, 1923; Day Co., sandy shore of Dry Woods Lake, *Over* 14479, July 5, 1922; Roberts Co., flood plain of Spring Creek, Hartford Beach, Big Stone Lake, Over 14482A, July 17, 1922, May 21, 1923; *Ball & Over* 2246, Aug. 9, 1923; Hiawatha Beach, Big Stone Lake, *Ball & Over* 2240, Aug. 9, 1923; deep rocky coulee 5 miles west of Sisseton, *Ball & Over* 2233, Aug. 8, 1923; shallow coulee in prairie 3 miles west of Sisseton, *Ball & Over* 2235, Aug. 8, 1923.

In July, 1923, a native willow was found in cultivation on the Dickinson Substation, Dickinson, No. Dak., in the west-central part of the State. It proved to be *S. missouriensis* Bebb, but the origin of the original cuttings is not known. A similar plant cultivated on the Northern Great Plains Field Station, Mandan, No. Dak., probably

is *missouriensis* also, and equally probably came from the nearby Missouri River at Bismarck.

Local collectors in the Dakotas and adjacent Minnesota can do much to determine the range of this and other species of equally doubtful distribution.

Salix petiolaris in the Dakotas.

Salix petiolaris J. E. Smith is another species of which the western limits of range are but little known. Recent manuals of botany give the western limit in the United States variously as "Wisc.," "Great Lakes," "Ill.," and "S. D.," and its range in Canada variously as "N. W. Ter.," "Man.," and "Sask." The South Dakota reference is given by Rydberg[1] but upon what authority is not known to the writer. MacMillan[2] states that it occurs in the "N. E. and S. E. district" of the Minnesota Valley, which would confine it to the eastern portion of southern Minnesota.

In Iowa, *petiolaris* occurs across the northeastern third, as far west as Webster and Emmet (*Cratty*) Counties.

Salix petiolaris is widely distributed in Minnesota, as recent collections indicate. In the herbarium of the writer are specimens from Anoka (*Metcalf* 1325), Stearns (*Over* 15442), and Chippewa (*Moyer* 401) Counties, which show a range practically across the State from east to west just north of Minneapolis and one-third of the way from the southern boundary to the Canadian line. It also contains 4 specimens from the vicinity of Cass Lake, Cass County (*Pammel et al* 14, 502, 583, 589), in the north-central part.

In North Dakota, the writer's herbarium shows specimens from Hankinson, Richland County (*V. Bailey*), Lake George, McHenry County (*Mabbott* 417), and Birchwood in the Turtle Mountains of Rolette County (*V. Bailey*). In the National Herbarium there are specimens also from Butte, Benson County (*Lunell*), and Underwood, McLean County (*Metcalf* 413).

If a straight line be drawn from Webster County, Iowa, the most southwestern station for *petiolaris* in the State, northwest to McLean County, in central North Dakota, most southwestern outpost of the species in that State, the line will pass at some distance to the south west of Chippewa County, Minnesota, and Richland County, North

[1] Rydberg, Per Axel. Flora of the Rocky Mountains and adjacent Plains 195. 1917.

[2] MacMillan, Conway. The Metaspermae of the Minnesota Valley. Geol. & Nat. Hist. Surv. Rept. Bot. Ser. **1**: 183. 1892.

Dakota, other southwestern points in its known range, and will cut off several counties in northeastern South Dakota. It is something of a happy coincidence, therefore, that on May 23, 1923, Prof. W. H. Over, should have collected an undoubted specimen of this species near a spring, east of Bitter Lake, Day County, South Dakota (*Over* 15374, in herbaria C. R. Ball and University of South Dakota). Day County is the second county from the northeast corner of South Dakota and just south of Marshall County where *S. candida* was found. Both contain many glacial lakes.

SALIX CANDIDA NEW TO SOUTH DAKOTA.

Salix candida Fluegge is found in cold bogs from Newfoundland, New England and New Jersey westward to the Rocky Mountains of Colorado, Wyoming, and Montana and Alberta, and the mountains of British Columbia. The southern boundary of its range is found in the glacial bogs of the northern portions of Ohio, Indiana, Illinois and north central Iowa. From there the western line of its prairie distribution bent sharply far to the northward, the next stations previously known to the northward being at Butte in Benson Co. and Underwood in McLean Co., both in central North Dakota, in the glaciated area east of the Missouri River.

In 1923, however, it was collected in "marshy places at the northeast corner of Buffalo Lake, Marshall Co." So. Dak., by Prof. W. H. Over, No. 15438, on Aug. 3. The plant apparently was growing luxuriantly and has unusually broad leaves. The material is deposited in herb. Univ. So. Dak., Nat. Herb. and that of the writer. Marshall Co. is in the northeastern portion of the State, lying against the North Dakota line just west of Roberts Co., discussed previously in this paper. This collection extends the known range considerably to the southwest. The species may be looked for about the margins of the numerous other swampy lakes in northeastern South Dakota and adjacent North Dakota.

SALIX CANDIDA DENUDATA ANDERSSON.

Andersson[1] erected the variety *denudata* of *Salix candida* in 1868 but it has not been recognized in manuals of botany until recently. Andersson cited no collections or localities. Robinson and Fernald[2] give the range as "Gaspé Co., Que., to Wisc. and Ct."

[1] Andersson, N. J., in De Candolle Prodromus Syst. 16[2]: 278, 1868.
[2] Robinson and Fernald, Gray New Man. Bot. 327, 1908.

The variety differs from the species in having narrower leaves, glabrate or glabrescent on both sides, especially above, and sometimes glaucescent beneath.

In his discussion of *candida* and its variations, Schneider[1] cites specimens of this variety (p. 228) from Newfoundland, Quebec, Ontario, New Jersey, New York, and Wisconsin. To this distribution now should be added Connecticut, as stated by Robinson and Fernald, and perhaps Indiana.

The specimens seen by the writer and their locations are listed below. CONNECTICUT: Open places in swamp, Salisbury, *C. A. Weatherby* 3634, June 6, 1915 (Nat. Herb.); Twin Lakes, Canaan, *Chas. A. Davis* 3 (in part), June 1, 1912 (herb. C. R. B.). Of three full sheets of the Davis collection only one bears material of this variety. NEW YORK: 3–6 dm. high, in water, "Fiddlers Glen," Pecksport, *W. R. Maxon* 6206, June 9, 1916 (herb. C. R. B.).

The Indiana plant was collected "in a willow bog on the south side of Pigeon River, 1¼ miles east of Mongo, Lagrange Co.," *Chas. C. Deam* 30458, May 27, 1920. Mr. Deam, the State forester, notes concerning this plant "Closely associated with *S. bebbiana*, *S. candida*, *S. petiolaris*, and other species of Salix. Only two specimens found. In habit and size resembles *S. candida* and grew with it." The developing leaves are linear, strongly involute, and glabrous, even to part of those just unfolding. In the numerous aments, the capsules also are entirely glabrous and almost all have remained unfertilized. This indicates, though it does not prove, a hybrid origin. The styles are usually long and slender, and deeply divided.

SALIX PELLITA ANDERSSON IN MICHIGAN.

For many years this species was misinterpreted by American botanists, as Fernald[2] so excellently has shown. The only locality in the United States mentioned by Fernald was "northern Maine" to "the lower Androscoggin River, Maine." Schneider,[3] in discussing this species, gives its distribution as follows (p. 83):

"I have seen forms which I refer to *S. pellita* from southern Labrador

[1] Schneider, Camillo. Notes on North American Willows VIII. Jour. Arnold Arb. **1**: 211–232, 1920.

[2] Fernald, M. L. The identity of Andersson's *Salix pellita*. RHODORA **6**: 191. Sept., 1904.

[3] Schneider, Camillo. Notes on American Willows—VI. Journ. Arnold Arboretum **1**: 67-97. (Oct.) Nov. 20, 1919.

(*Fernald & Wiegand*, No. 3182, st.; G., O.; forma quamvis incerta, porro observanda), western Newfoundland, New Brunswick (as far north as Woodstock in Carleton County), Maine (Aroostook and Somerset Counties), Vermont (Bloomfield in Essex County), and westward from Quebec (as far north as Lake St. John), Michigan (Isle Royale, Houghton County), Ontario (Savanne, Thunder Bay County), and the Lake Winnipeg region."

Isle Royale, mentioned above, is the only station recorded by Schneider for this species in the United States west of New England. It is an island in the northern part of Lake Superior, in longitude 89° and latitude 48°, near the mainland at the Ontario-Minnesota boundary. The collection (a pruinose sterile twig, in Gray Herbarium) was made by Wm. S. Cooper (No. 6) on July 22, 1909. To this Michigan locality may now be added another, in the Upper Peninsula and about 200 miles southeast of Isle Royale. The new locality is the swampy valley of the Tahquamenon River in Luce County. A specimen collected by Chas. K. Dodge, identified by the writer, and now at the University of Michigan, is labeled "abundant, low marshy banks of the Tahquamanan River, Luce Co., Sept. 9, 1915." A second specimen was collected there by Franklin P. Metcalf (No. 2301), on the Tahquamenon River near Newberry, Luce Co., Sept. 15, 1922. Mr. Metcalf, a botanist of the Bureau of Biological Survey, U. S. Department of Agriculture, states that the area where his collections were made is a swampy stretch of land about 3 miles in diameter, through which the river meanders. It is located some 8 miles on an airline or about 15 miles by water down the river from the town of Newberry and is surrounded by higher land bearing timber. The locality is known locally as "Dead Man's Farm," because of a deserted farm on the nearby ridge. The chief vegetation of this swampy area consists of *Carex spp.*, *Scirpus cyperinus* and *Phalaris arundinacea*, all abundant, *Cornus stolonifera* and *Polygonum* spp., both common, and at least three species of *Salix*, namely, *lucida*, which was abundant, and *petiolaris* and *pellita*, both of which were common. His specimens will be placed in the National Herbarium.

The two specimens, both sterile, collected by Dodge and Metcalf, are almost identical in appearance, with pruinose twigs and narrowly lanceolate leaves about 1.2–1.4 × 8–10 or 1.5 × 7 cm. in size and showing no sign of becoming glabrate beneath, though collected late in the season.

BUREAU OF PLANT INDUSTRY, Washington, D. C.

SOME NEW CLADONIAS.

C. A. Robbins.

In June, 1923, the writer sent a collection of Cladonias from Wareham, Massachusetts, to H. Sandstede, the eminent German Cladoniologist, for examination. Some of the material he, in turn, sent to Dr. Wainio. The final report has been received and it is of interest to note that the lot yielded a new species, a new form, and two new modifications.[1] These should be recorded and it seems advisable to record also certain other plants, hitherto undescribed, some of which belong with them. All are more or less common throughout the Buzzards Bay region and hence it appears likely that some or all of them will be found in other localities.

Dr. Wainio's comments upon the two new plants named by him are relative to the exhaustive analyses of Cladonia species as worked out by him in his Monographia Cladoniarum, particularly in volumes one and two. As the comments in themselves furnish little help to the collector in determining the plants, descriptions are added, together with a statement of the differences between each plant and related species or forms which, it is hoped, will make identification possible.

1. Cladonia **clavulifera** Wainio, sp. nov., affinis *Cl. mitrulae* Tuck. sed apotheciis parvis, furcis et podetiis subcontinuis corticatis (KOH non reagentibus) ab ea differens textura podetiorum, a *Cl. alpicola* var. *Karelica* Wain. distinguitur.

The species belongs with the club-shaped Cladonias. The primary squamules are persistent or disappearing, 3–10 mm. long, irregularly lobed or incised, esorediate; podetia 5–35 mm. long, 1–5 mm. in diameter, club-shaped, erect, the sides entire or often terminated by apothecia, simple or basally branched, usually somewhat digitately short-branched at the tips; cortex continuous to areolate, smooth, rugose, or somewhat warty, esorediate, esquamulose, or sparingly squamulose toward the base, glaucescent to subolivaceous; apothecia brown to brownish-black.

In clusters or colonies; on sand and sandy loam; often in old fields and open woods. Among our New England Cladonias the species is perhaps nearest in appearance to *Cl. subcariosa* (Nyl.) Wainio. The latter, however, is KOH red. It might also be confused with *Cl. cariosa* (Ach.) Spreng., var. *corticata* Wainio. That plant differs in

[1] According to Wainio's subdivision of Cladonia species, var. = varietas constantior; f. = forma autogenetica inconstans; m. = modificatio inconstans statione producta.

being lighter in color, more branched with the branches longer and slenderer, KOH yellow or yellowish. *Cl. clavulifera* is probably more or less widely distributed and there is reason to suspect that it is represented in American herbaria under one or the other of these names and also under that of *Cl. symphycarpa* Fr. Wainio has shown, however, (Acta Soc. pro Fauna et Flora Dennica **10**: 55. 1894, often cited as Mon. Clad. **2**: 55. 1894) that this Friesian species is a compound conception with *Cl. cariosa* (Ach.) Spreng., var. *corticata* Wainio as one of the components and *Cl. alpicola* (Flot.) Wainio, var. *Karelica* Wainio as another.

m. **subvestita** Robbins, m. nov. Similar to typical form of the species but with the podetia squamulose throughout. Common in the Buzzards Bay region, often occurring with the species.

2. CLADONIA CARASSENSIS Wainio, Acta Soc. pro Fauna et Flora Fennica **4**: 313. 1887, often cited as Mon. Clad. **1**: 313. 1887. This species is recorded from but one locality "In montibus Carassae in provincia Minarum, Brasiliae." In the Brazilian plants the podetia are "albida aut rarius cinereo-fuscescenti-variegata." One form and two modifications are recognized. They are

f. IRREGULARIS Wainio, l. c. Podetia 20–80 mm. long, esquamulose; cups oblique.

m. REGULARIS Wainio, Acta Soc. pro Fauna et Flora Fennica **14**: 237. 1897, often cited as Mon. Clad. **3**: 237. 1897. f. *regularis* Wainio, Ibid. **4**: 315. 1887, often cited as Mon. Clad. **1**: 315. 1887. podetia 20–30 mm. long, esquamulose; cups regular.

m. DIGRESSA Wainio, ibid. **14**: 237. 1897, often cited as Mon. Clad. **3**: 237. 1897. f. *digressa* Wainio, ibid. **4**: 315–316. 1887, often cited as Mon. Clad. **1**: 315–316. 1887. Podetia 20–30 mm. long, squamulose principally at the margins of the cups; cups regular to obsolete.

f. **subregularis** Wainio, f. nov. Podetia olivacea- et glauco-variegata differens.

This form has the primary squamules persistent or disappearing, small to medium size, crenate to subdigitately lobate, esorediate, KOH yellow; podetia 20–40 mm. long, 1–4 mm. in diameter, subcylindrical or irregularly turgescent, scyphiferous, simple or repeatedly proliferate from the margins of the cups; cups moderately dilated, 3–7 mm. in diameter, perforate, regular; cortex continuous or areolate, usually smooth, esorediate, and without granules, esquamulose or sparingly squamulose toward the base, glaucescent and olivaceous variegated, KOH yellow; apothecia small to medium size, solitary or clustered, light brown becoming darker.

In clusters and colonies, often intermixed with related forms or other species; on sandy loam in dry, upland woods, on peaty soil on bog margins, occasionally on decaying and decayed wood. This form

differs from m. *regularis* only in color. The species as it is represented in this region always manifests this color difference while at the same time it exhibits variations similar or somewhat similar to the form and to the other modification established by Wainio.

f. **obliqua** Robbins, f. nov. Podetia 20–70 mm. long, glaucescent and olivaceous variegated, esquamulose or sparingly squamulose toward the base; cups oblique.

m. **spectabilis** Robbins, m. nov. Podetia 20–70 mm. long, glaucescent and olivaceous variegated, squamulose throughout; cups regular to oblique.

Wainio observes of the species (l. c.) "Facie externa fere est sicut *Cl. crispata.*" Our plants also closely approach forms of *Cl. squamosa* (Scop.) Hoffm. Neither, however, affords the yellow reaction. *Cl. subsquamosa* (Nyl.) Wainio is likewise somewhat similar in construction and agrees further in its response to caustic potash. It differs in having the podetia more or less granular.

3. Cladonia furcata (Huds.) Schrad., var. racemosa (Hoffm.) Floerk. Wainio, Acta Soc. pro Fauna et Flora Fennica **4**: 316. 1887, often cited as Mon. Clad. **1**: 316. 1887. m. **subclausa** Sandstede, m. nov. Podetia 25–40 mm. long, 0.5–2 mm. in diameter, erect or decumbent, cylindrical or subcylindrical, esquamulose or squamulose toward the base, much branched especially upward; branches subregularly or radiately disposed, the upper ascendent to erect, the sterile summits slightly expanded and somewhat truncate with 2–5 irregularly or radiately spreading points thus forming small, imperforate or sometimes minutely perforate pseudo-cups; cortex smooth, continuous to areolate, esorediate, glaucescent to olivaceous.

In small or large clusters; on sandy loam, often in open woods. Common locally. This plant resembles m. *subulata* Floerk. but the two are easily distinguishable since the latter has the sterile summits forked and subulate, (cf. Tuckerman, Synopsis **1**: 248. 1882).

4. Cladonia subcariosa (Nyl.) Wainio, Acta Soc. pro Fauna et Flora Fennica **10**: 38. 1894, often cited as Mon. Cl. **2**: 38. 1894. m. **squamulosa** Robbins, m. nov. Podetia 5–35 mm. long, 1–4 mm. in diameter, erect, club-shaped, more or less densely squamulose.

On sandy loam; often in old fields among grass. This plant differs from the species only in the squamulose podetia.

5. Cladonia uncialis (L.) Web. Wainio, Acta Soc. pro Fauna et Flora Fennica **4**: 254. 1887, often cited as Mon. Clad. **1**: 254. 1887. m. **soraligera** Robbins, m. nov. Podetia 10–50 mm. long, 1–3 mm. in diameter, erect or decumbent, sorediate; soredia aggregated in somewhat rounded, scattered masses, 1–12 mm. in diameter.

In small or large colonies, occasionally in subprostrate patches. On sand or sandy loam; in dry, open, mixed woods. All forms of the species, common in this region, seem liable to produce soredia although it sometimes happens that in a colony of plants not all will be sorediate. The species is cosmopolitan in its distribution and it has always been

considered an esorediate plant. That condition, however, may prove to be not uncommon in different parts of its range as is the case with *Cl. sylvatica* (L.) Harm. which was likewise looked upon as an esorediate species until Sandstede found it in Europe in a sorediate state (m. *sorediata* Sandst.) and which occurs also in the Buzzards Bay region.

The following plants were also reported. All are well known in Europe but are not mentioned in New England lists.

6. CLADONIA STREPSILIS (Ach.) Wainio, Acta Soc. pro Fauna et Flora Fennica **10**: 403. 1894, often cited as Mon. Clad. **2**: 403. 1894. On sandy or gravelly loam; in old fields, upland woods and roadsides. The species is abundant in Plymouth County and even more so in parts of Norfolk County, as at Stoughton where it often spreads over old upland pastures in dense colonies. The writer collected it in June, 1923, from near the summit of Mount Wachusett. It probably has a wide distribution but seems to be little known in this country. Willey sent it to Wainio from New Bedford as "*Cl. alcicornis.*" (l. c. 408) and G. K. Merrill (Bryologist **12**: 93. 1909) states that it "has by many authors been referred to *Cl. cariosa.*" It is stouter than that species and the primary squamules are coarser, often much elongated. A greenish or bluish-green reaction to chloride of lime is unique among Cladonia species. The specimens sent appear to have been f. *glabrata* Wain. (podetia esquamulose). Locally there is also m. *corraloidea* Wain. (podetia squamulose).

7. CLADONIA PITYREA (Floerk.) Fr., var. ZWACKHII Wainio, f. SUBACUTA Wainio, Acta Soc. pro Fauna et Flora Fennica **10**: 355. 1894, often cited as Mon. Clad. **2**: 355. 1894. On tree bases, decayed wood, often among mosses in moist places. Common. This form has the podetia decorticate, granulose, esquamulose and without cups. Recorded by Fink from Minnesota (Lichens of Minnesota. Contr. Nat. Herb. **14**: 129. 1910).

m. HOLOLEPIS (Floerk.) Wainio l. c. 355. In similar situations as f. *subacuta* but less common. Apparently not before recorded from North America. The plant differs from f. *subacuta* in having the podetia more or less squamulose and with cups. Tuckerman does not mention *Cl. pityrea* but according to Wainio (l. c. 363) *Cl. squamosa*, Hoffm., f. *botryoides* Tuckerman, Syn. **1**: 246. 1882, belongs with the present species.

ONSET, MASSACHUSETTS.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLVIII.

COMPOSITAE.

RUDBECKIA.

R. hirta L. Dry fields, very common throughout.

R. hirta L., var. **tubuliforme** Burnham. Am. Bot. xx. 22, 1914. Wellesley Hills (*Bradford Torrey*, July 30, 1905). Specimen in herb. Gray.

R. laciniata L. Meadows and wet thickets; frequent north and west of Boston, rare or lacking in southern towns. The form commonly cultivated under the name of "Golden Glow" is frequently persistent, and rarely sporadic on dumps.

R. SPECIOSA Wenderoth. Wellesley (*Margaret C. Ferguson*, July 5, 1889). Specimen in herb. Wellesley College.

SANTOLINA.

S. CHAMAECYPARISSIAS L. Thoroughly introduced in sandy bank near Monponsett station, Hanson (*M. L. Fernald*, Oct. 29, 1916). Specimens in herb. Gray and N. E. Botanical Club. Native of southern Europe.

SENECIO.

S. aureus L. Swamps and meadows, common throughout.

S. JACOBAEA L. Pasture, Danvers (*Mrs. J. M. Kennedy*, Oct. 15, 1910). Specimen in herb. Gray.

S. MACDOUGALII Heller. Bull. Torr. Bot. Club xxvi. 592, 1899. N. Andover (*A. S. Pease*, Sept. 17, 1893). Specimen in herb. N. E. Botanical Club. Native of Arizona.

S. obovatus Muhl. Dry rocky and gravelly soil, rare; Boxford, Topsfield, "in collibus siccis umbrosis ad Ipswich," (*Wm. Oakes*, no date), Needham.

S. pauperculus Michx. (Includes *S. Balsamitae* Muhl. and vars. *pauperculus* (Michx.) Fernald and *praelongus* Greenman. See Ann. Mo. Bot. Gard. iii. 159 1916.) Dry pastures and exposed ledges; occasional from Blue Hills northward, also at Marshfield.

S. VISCOSUS L. Waste places in moist soil occasional in the cities.

S VULGARIS L. Waste places in moist soil; frequent in Boston and vicinity, occasional elsewhere.

SERICOCARPUS.

S. asteroides (L.) B S P. Dry open woods and pastures, very common throughout.

S. linifolius (L.) B S P. Dry open woods and pastures, frequent throughout.

SILPHIUM.

S. PERFOLIATUM L. Escaped from cultivation to waste land; Danvers, Cambridge, Boston (Fenway).

SILYBUM.

S. MARIANUM (L.) Gaertn. Appeared suddenly as garden weed, Lexington (*Miss E. L. Shaw*, July 27, 1898). Specimen in herb. Gray.

SOLIDAGO.

S. altissima L. Open places in rich soil; few records from western and southwestern towns, but common elsewhere.

S. arguta Ait. Woods; occasional from Blue Hills and Dover northward.

× **S. asperula** Desf. Borders of salt-marshes above high tide; frequent from Revere to Scituate, probably elsewhere.

S. bicolor L. Dry sandy soil, very common throughout.

S. caesia L. Rich woods, common throughout.

S. caesia L., var. **axillaris** (Pursh) Gray. Usually in drier soil than the species, occasional.

S. caesia L., var. **paniculata** Gray. Rich woods, frequent.

S. canadensis L. Fields and pastures; common, except in southern towns.

S. canadensis L., var. **Hargeri** Fernald. RHODORA xvii. 11–12, 1915. Salisbury (*A. A. Eaton*, no date). Specimen in herb. N. E. Botanical Club.

S. Elliottii T. & G. Rich moist soil; frequent from Hingham, Blue Hills, Dedham and Sherborn south, often abundant. This is the northern limit of the species in New England, but it reappears in Nova Scotia (see Fernald, RHODORA xxiii. 292, 1921).

S. graminifolia (L.) Salisb. Moist soil, occasional in northern towns.

S. graminifolia (L.) Salisb., var. **Nuttallii** (Greene) Fernald. Fields and roadsides, common throughout.

S. humilis Pursh. (*S. uliginosa* Nutt. See RHODORA xvii. 6, 1915; x. 88–89, 1908.) Very wet meadow, Boxford (*E. F. Williams*, Aug.

19, 1906); specimen in herb. Gray; "Dedham to Ponkapoag" (*Wm. Boott*, Aug. 27, 1869); specimen in herb. Wellesley College.

S. juncea Ait. Dry sandy soil, very common throughout.

S. latifolia L. Rich woods; not reported from southern towns, occasional northward.

S. nemoralis Ait. Dry sandy fields and hillsides, very common throughout.

S. puberula Nutt. Dry sandy soil, common throughout.

[*S. rigida* L. Reported from Framingham in RHODORA i. 97, 1899, but no specimen is available.]

S. rugosa Mill. Swamps, thickets and waste places; very common throughout.

S. rugosa Mill., var. **aspera** (Ait.) Fernald. RHODORA xvii. 7, 1915. Fields and woods, common.

S. rugosa Mill., var. **sphagnophila** Graves. Swamps and wet meadows; frequent from Stoneham, Malden and Dedham south toward the coast.

S. rugosa Mill., var. **villosa** (Pursh) Fernald. Wellesley (*F. W. Hunnewell*, September, 1910). Specimen in herb. F. W. Hunnewell.

S. sempervirens L. Salt-marshes and seashores, common and abundant all along the coast.

S. serotina Ait. Swamps and thickets; occasional from Sharon, Needham and Ashland north.

S. serotina Ait., var. **gigantea** (Ait.) Gray. Swamps and meadows; no reports from southern towns, but occasional elsewhere.

S. speciosa Nutt. Dry open woods and fields; occasional and often abundant (18 stations).

S. squarrosa Muhl. Dry ground and open woods, rare; Beverly, Burlington, Westford, Groton.

S. suaveolens Schoepf. (*S. odora* Ait., see RHODORA xxi. 69–70, 1919.) Dry woods and fields, common throughout.

S. tenuifolia Pursh. Wet meadows and sandy shores of ponds; frequent in southern towns; rare northward (Rockport, Newburyport, Tewksbury, Wilmington, Westford).

S. ulmifolia Muhl. Dry woods in rich soil; occasional, but apparently rare in southern towns.

S. uniligulata (DC.) Porter. Bogs and peaty swamps, frequent.

S. uniligulata (DC.) Porter, var. **neglecta** (T. & G.) Fernald. RHODORA xxiii. 292, 1921. Bogs and swamps, very common throughout.

S. suaveolens Schoepf × **rugosa** Mill. Open deciduous woods, Stony Brook Reservation, one plant (*N. T. Kidder*, Aug. 26, 1920).

C. H. Knowlton
Walter Deane
} *Committee on Local Flora.*

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The date of the June issue (unpublished as this goes to press) will be announced later.

Photo by W. R. F.

COLEUS PARASITIZED BY OROBANCHE RAMOSA L.

Farlow Bot. Lab

RHODORA

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 26. August, 1924. No. 308.

A STUDY OF THE GENUS ZIZANIA.

Norman C. Fassett.

In attempting to place some unusual specimens of *Zizania* collected in the summer of 1923 near the city of Quebec, the writer found it difficult to determine to his satisfaction the precise difference between *Z. palustris* and *Z. aquatica* as defined by Professor A. S. Hitchcock in the seventh edition of Gray's Manual. Examination of the spikelets, however, showed that there was a distinct difference, apparently recently overlooked, in the texture of the pistillate lemmas; those of the northern narrow-leaved form (*Z. aquatica* of the Manual) are firm and tough, while those of the southern broad-leaved form (*Z. palustris* of the Manual) are thin and papery. This character, combined with the greater height, wider leaves, and more luxuriant inflorescence of the southern form, would appear sufficient for specific distinction, were it not for the fact that in the Middle West there is a grass which combines the characters of these two, having the large vegetative growth of the southern plant, and the firm lemma of the northern one.

The *Zizania palustris* of Hitchcock's treatments was known as *Z. aquatica* until 1908, when he applied the latter name to the small plant of the North. Linnaeus had based *Z. aquatica* upon Gronovius's *Zizania* of the Flora Virginica, page 189, and upon *Arundo alta gracilis, foliis viridi caeruleis, locustis minoribus,* Sloan. Hist. Jamaica, page 110, plate 67. The plant of Gronovius was undoubtedly the broad-leaved one, as the narrow-leaved plant is not found south of New

England; no *Zizania* occurs in Jamaica, and Sloane's plant is probably *Phragmites communis* (L.) Trin. *Z. aquatica* of the Species Plantarum should be taken, then, as based upon *Zizania* of Gronovius, and the name of the genus itself was taken, of course, directly from Gronovius.

Professor Hitchcock states[1] that the two specimens of *Zizania* in the Linnean herbarium are the narrow-leaved form, one of which is marked "1 aquatica," and the other "Zizania HU," each in Linnaeus's hand. Here arises a difficult nomenclatorial question. Linnaeus's reference in the Species Plantarum (i. e., Gronovius) obviously belongs to one plant, and his specimen ("1 aquatica") to another.[2] Hitchcock solved this problem by applying the later-defined name, *Z. palustris* L.,[3] to the broad-leaved plant, thus reserving *Z. aquatica* for the narrow-leaved one which was represented by a specimen in the Linnean herbarium, saying, "The fact that later he [Linnaeus] described the broad-leaved form as a distinct species confirms the opinion that his idea of *Z. aquatica* was the narrow-leaved species." But was *Z. palustris* the broad-leaved species, as Hitchcock stated? The description of this species starts, "Culmis bipedalis;" the broad-leaved species to which Hitchcock referred this name is commonly from two to three meters high, while the narrow-leaved plant seldom exceeds a meter in height. "*Gluma* calycina *diphylla rigidula*" applies to the firm lemmas of the narrow-leaved plant much better than to the papery lemmas of the broad-leaved one. "Folia . . . *arundinia phragmitis latiora,*" upon which Hitchcock based his decision, loses some of its force when we note that the leaves of the European *Phragmites communis*, which Linnaeus doubtless had in mind, are in general narrower than those of the plant with which we are familiar in America.

Zizania palustris was definitely described from the Hortus Upsaliensis ("H. U."), and there is a sheet marked "HU" in the Linnean herbarium, which is, according to Hitchcock, the narrow-leaved plant, and it is fairly evident that it was from material of which this sheet is representative that Linnaeus made the description of that species. Schreber, one year after the description of *Z. palustris*, gave a full discussion of this plant, which he states had only recently

[1] Contrib. U. S. Nat. Herb. xii. Pt. 3: 124 (1908).

[2] It is interesting in this connection to note Mr. F. V. Coville's preface to Professor Hitchcock's work, in which he states as a principle that in such cases the Linnean reference rather than the specimen marked by Linnaeus should determine the application of a name.

[3] Mant. 295 (1771).

been grown in the Upsala gardens,[1] and his colored plate represents the small plant, not only in size of plant and width of leaf, but in the character of the pistillate lemma, which is plainly shown. Col. Monro, in his identification of the grasses in the Linnean herbarium,[2] says, "I. *Z. aquatica*, L.! The plant so named is the small state which I believe Linnaeus, in his Mant. p. 295, intended to indicate by *palustris*, of which form there is also a specimen from Upsal Garden, marked '*palustris*' by Sm." There can be no doubt, then, that *Z. palustris* is the small narrow-leaved plant.

The sheet marked "1 aquatica" was in the Linnean herbarium in 1753,[3] but Linnaeus drew no description from this specimen, nor did he quote any locality in addition to those given by Gronovius and Sloane. He identified the specimen in his herbarium with the Gronovian plant, apparently after the publication of *Z. aquatica*. Later he segregated the narrow-leaved plant as *Z. palustris*, leaving the name *Z. aquatica* for the tall broad-leaved plant of the more southern range, which was its original application.

ZIZANIA L. Gen. Pl. ed. 5: 427 (1754). Monoecious grasses, the upper part of the inflorescence pistillate, the lower staminate: glumes obsolete, represented in the pistillate spikelets by minute cupules below the lemmas: pistillate lemma usually long-awned, closely embracing the grain, clasping the palea by its inrolled margins, scabrous at least on the nerves and awn; staminate lemma and palea sub-equal, lemma sometimes short-awned: grain long-cylindrical, black: stamens six. Type species *Z. aquatica*.

a. Plants without creeping rootstocks: staminate branches of the inflorescence invariably lacking pistillate flowers; pedicels of the pistillate spikelets coarse and clavate, those of the staminate capillary *b*.
  b. Pistillate lemmas thin and papery, dull, finely striate, scabrous over the whole surface;[4] the aborted spikelets slender and shriveled, less than 1 mm. thick *c*.
    c. Plant (0.8–) 1.2–3 m. tall: leaves (0.8–) 1–5 cm. broad; ligules (0.6–) 1–2 (–2.5) cm. long: awn of the pistillate lemma (1.5–) 2–7 cm. long..... *Z. aquatica*.

[1] Schreber, Beschreibung der Gräser, ii. 55 (1772). "In Betrachtung dessen würde es vielleicht nützlich sein, dieses Gewächs, welches in dem königlichen französischen Garten zu Trianan schon seit geraumer Zeit cultivirt wird, in dem akademischen botanischen Garten zu Upsal neuerlich fortgekommen ist, und auch in den meisten Gegenden von Teutschland ohnfehlbar fortkommen würde, einheimsich zu machen."

[2] Monro, Journ. Linn. Soc. vi. 51 (1862).

[3] Jackson, B. D. Proc. Linn. Soc. London, 124th session, 152 (1912).

[4] This character is best seen with the binocular microscope.

c. Plant 4–5.5 dm. tall: leaves 3–12 mm. broad; ligules 3 mm. long: awn of the pistillate lemma 1–8 mm. long....var. *brevis.*

b. Pistillate lemmas firm and tough, with lustrous coarsely corrugate surface, scabrous on the margins, at the summit and along the awn, and sometimes along the nerves, otherwise glabrous: the aborted spikelets with distinct body 1.5–2 mm. thick *d.*

d. Plant 0.7–1.5 m. tall: leaves 4–10 (–14) mm. broad; ligules 3–5 (–10) mm. long: lower pistillate branches with 2–6 spikelets; lower or middle staminate branches with 5–15 spikelets.....var. *angustifolia.*

d. Plant 0.9–3 m. tall: leaves 1–3 cm. broad; ligules 1–1.5 cm. long: lower pistillate branches with 11–29 spikelets; lower or middle staminate branches with (20–) 30–60 spikelets.....var. *interior.*

a. Plant perennial, with creeping rootstocks: uppermost staminate branches of the inflorescence terminated by pistillate spikelets: pedicels of the staminate and the pistillate spikelets of nearly the same diameter.....*Z. latifolia.*

1. ZIZANIA AQUATICA L. Sp. Pl. ii. 991 (1753); Lamb. Linn. Trans. vii. 264, t. 13 (1804);[1] Nutt. Gen. N. Am. Pl. ii. 210 (1818); Elliott, Sketch of Bot. of S. C. & Ga. ii. 585 (1824); Chapman, Fl. Southern U. S. 549 (1860); Bentham, Journ. Linn. Soc. xix. 54 (1881) in part; Rendle, Journ. Linn. Soc. xxxvi. 345 (1904) in part; not Willd. Sp. Pl. iv. 394 (1805); nor Link, En. Pl. ii. 391 (1822); nor Hitchcock, Contrib. U. S. Nat. Herb. xii. Pt. 3: 124 (1908) and in Gray, Manual, ed. 7: 120 (1908). *Z. clavulosa* Michx. Fl. Bor.-Am. i. 75 (1803); Willd. Sp. Pl. iv. 394 (1805). *Hydropyrum esculentum* Link, Hort. Berol. i. 252 (1827) in part; Kunth, Enum. i. 9 (1833) in part, and Suppl. 7, t. 1, fig. 1 (1835). *Z. effusa* Herb. L. ex Monro, Journ. Linn. Soc. vi. 52 (1862). *Z. palustris* Hitchcock, Contrib. U. S. Nat. Herb. xii. Pt. 3: 124 (1908) and in Gray, Manual, ed. 7: 120 (1908); not L. Mant. 295 (1771).—Mouths of rivers and in brackish places, along the Atlantic coast of North America from southern Maine to western Florida and probably Louisiana, inland in northern New York, and rarely in Michigan.

The following representative specimens may be cited:[2] MAINE: Woolwich, Sept. 15, 1916, *Fernald & Long*, no. 12581; Bowdoinham, Sept. 14 and 19, 1916, *Fernald & Long*, no. 12580. MASSACHUSETTS: Newbury, July 21, 1913, *D. White*, no. 214; Harwich, Aug. 7, 1919, *Fernald & Long*, no. 17904. NEW YORK: Woodville, June 23, 1921, *H. D. House*, no. 8217; Hammond, July 28, 1915, *O. P. Phelps*, no. 1371; Ithaca, Aug. 12, 1916, *F. P. Metcalf*, no. 5581; Glenmont, Sept. 12, 1917, *H. D. House*; Sandy Creek Township, Aug. 25, 1922, *Fernald, Wiegand, & Eames*, no. 14161. NEW JERSEY: Point Pleasant,

[1] The plate illustrates the broad-leaved plant. Lambert states on the authority of Smith that Linnaeus described it originally as *Z. aquatica*, but later called it *Z. palustris*, reserving the former name for Sloane's plant (which is *Phragmites communis*).

[2] Specimens in the Gray Herbarium and Herbarium of the New England Botanical Club unless otherwise noted.

Sept. 8, 1917, *A. Gershoy*, no. 78. DISTRICT OF COLUMBIA: Washington, Aug. 14, 1905, *Agnes Chase*, Kneucker's Gramineae Exsiccatae, no. 560; Eastern Branch, July, 1900, *E. D. Merrill*, no. 171. VIRGINIA: Carter's Wharf, Aug. 27, 1915, *I. Tidestrom*, no. 7729; Port Royal, Aug. 26, 1915, *I. Tidestrom*. FLORIDA: Duval Co., *A. H. Curtiss*, no. 3364 (there are two sheets under this number in the Gray Herbarium: one is typical *Z. aquatica;* the other has the pistillate lemmas partially glabrous, but still of sufficiently thin texture to warrant referring it here). ONTARIO: Pelee Island, Aug. 21, 1915, *MacDaniels & Eames*. MICHIGAN: New Buffalo, July 20, 1911, *O. E. Lansing, Jr.*, no. 3279.

1a. Z. AQUATICA, var. **brevis**, n. var., culmis 2–6.5 dm. altis solitariis vel subcaespitosis; foliis substrictis 6–18 cm. longis 3–9 (–11) mm. latis, ligulis 3 mm. longis; lemmatibus femineis 5–8 mm. longis chartaceis scabratis, aristis 1–8 mm. longis.

Culms 2–6.5 dm. tall, solitary or subcaespitose: leaves ascending, 6–18 cm. long, 3–9 (–11) mm. broad; ligules 3 mm. long: pistillate lemmas 5–8 mm. long, of thin papery texture, scabrous over the whole surface; awns 1–8 mm. long.—Tidal flats of the St. Lawrence River about Quebec. PROVINCE OF QUEBEC: St. Lawrence River above the city of Quebec, Sept., 1912, *M. O. Malte;* rocky tidal flats, Levis, Aug. 9, 1923, *Svenson & Fassett*, no. 853 (TYPE in Gray Herb.); rocky tidal flats, St. Augustin, Aug. 7, 1923, *Svenson & Fassett*, no. 854; Ste. Anne de Beaupré, Aug. 30, 1905, *John Macoun*, no. 68989; grèves intercotidales de Beauport, Aug. 8, 1922, *Bro. Victorin*, no. 15230. ONTARIO: Casselmann, *John Macoun*, no. 85842, approaches this variety, but has awns 1–1.5 cm. in length.

1b. Z. AQUATICA, var. ANGUSTIFOLIA Hitchcock, RHODORA, viii. 210 (1906). *Z. palustris* L. Mant. 295 (1771); Schreber, Beschreibung der Gräser, ii. 54. t. 29 (1772); Willd. Sp. Pl. iv. 395 (1805); not Rasp. Ann. Sci. Nat., Sér. I. v. 452 (1825); nor Hitchcock, Contrib. U. S. Nat. Herb. xii. Pt. 3: 124 (1908) and in Gray, Manual, ed. 7: 120 (1908). *Hydropyrum esculentum* Link, Hort. Berol. i. 252 (1827) in part; Kunth, Enum. i. 9 (1833) in part, not Suppl. 7, t. 1 (1835). *Melinum palustre* Link, Handb. i. 96 (1829). *Z. aquatica* Hitchcock, Contrib. U. S. Nat. Herb. xii. Pt. 3: 124 (1908) and in Gray, Manual, ed. 7: 120 (1908); not L. Sp. Pl. 991 (1753).—Eastern New Brunswick to central New York and eastern Ontario; northern Indiana. Type from Belgrade, Maine, Aug., 1895, *F. L. Scribner*.

The following specimens are typical: NEW BRUNSWICK: Lakeside, Aug. 25, 1923, *Svenson & Fassett*, no. 855; Westfield, Aug. 6, 1909, *M. L. Fernald*, no. 1285. MAINE: Calais, Aug. 3, 1909, *M. L. Fernald*, no. 1284; Milford, Aug. 15, 1916, *Fernald & Long*, no. 12579; Manchester, Aug., 1915, *F. L. Scribner*. VERMONT: Burlington, Aug. 5, 1921, *C. H. Knowlton;* Hubbardton, July 31, 1915, *Eames & Godfrey*, no. 9070. MASSACHUSETTS: Pepperell, Aug. 14, 1909, *L. W. Riddle* (in Herb. Wellesley College). NEW YORK: Plattsburg, Am.

Gr. Nat. Herb. no. 435; DeKalb, Aug. 8, 1914, *O. P. Phelps*, no. 172; Selkirk, Oswego Co., Aug. 24, 1922, *Fernald, Wiegand, & Eames*, no. 14160. Province of Quebec: Ste. Angele de Lavel, Nicolet Co., July 31, 1923, *Chamberlain & Knowlton*. Ontario: Russell, July 22, 1911, *John Macoun*, no. 85843; Ottawa, Sept. 16, 1912, *F. Fyles;* Ottawa, Aug. 8, 1894, *John Macoun*, no. 7506. Indiana: Miller, Aug. 20, 1913, *H. H. Smith*, no. 5772.

1c. Z. aquatica, var. **interior**, n. var., culmis 0.9–3 m. altis; foliis 2–8 dm. longis 1–3 cm. latis, ligulis 1–1.5 cm. longis; ramis femineis luxuriosissimis cum 11–29 spiculis, ramis masculis luxuriosissimis cum (20–)30–60 spiculis (hic *Z. aquaticam* simulantibus); lemmatibus femineis firmis nitentibus glabratis praeter margines nervosque et aristas (hic var. *angustifoliam* simulantibus).

Culms 0.9–3 m. tall: leaves 2–8 dm. long, 1–3 cm. broad; ligules 1–1.5 cm. long: lower pistillate branches with 11–29 spikelets; middle or lower staminate branches with (20–)30–60 spikelets (in these characters simulating typical *Z. aquatica*): pistillate lemmas firm, shining, glabrous except on the margins, nerves, and awns (in this character simulating var. *angustifolia*).[1]—*Z. aquatica* Lapham, Trans. Wisc. State Agri. Soc. iii. 419, pl. ii. (1854).—Lake Michigan to North Dakota and Nebraska; Texas. Indiana: Wolf Lake, Aug. 8, 1920, *D. C. Peattie*. Illinois: Bluff Lake, Union Co., Aug. 17, 1881, *A. B. Seymour* (in Herb. Wellesley College). Minnesota: Lake City, Aug. 20, 1883, *W. H. Manning*. Wisconsin: Brown Co., June, 1885, *J. H. Schuette*. Iowa: Ogden, Aug. 20, 1898, *L. H. Pammel*, no. 2147; Armstrong, Aug. 27, 1897, *Pammel & Cratty*, no. 764 (type in Gray Herb.). Nebraska: Whitman, July 31, 1893, *P. A. Rydberg*, no. 1630; Kennedy, Aug. 27, 1910, *J. M. Bates*. Texas: (no locality given) 1886–9, *G. C. Nealley*.

2. Z. latifolia Turcz. Bull. Soc. Nat. Mosc. 1838, no. 1: 105 (1838), and Cat. Baical.-Dahur. 21 (1838); Stapf, Kew Bull. 1909; 385 (1909). *Hydropyrum latifolium* Griseb. in Ledeb. Fl. Ros. iv. 466 (1853); Turcz. Bull. Soc. Nat. Mosc. xxix. Pt. 1: 2 (1856) and Fl. Baical.-Dahur. ii. Pt. 1: 289 (1856); Maxim. Primitiae Fl. Amur. 327 (1859); Regel, Tent. Fl. Ussuriensis, 171 (1861); Miq. Prol. Fl. Jap. 160 (1867); Franch. & Sav. Enum. Pl. Jap. ii. 156 (1879). *Z. dahurica* Turcz. ex Steud. Syn. Pl. Gram. 4 (1854). *Z. palustris* Siebold, Syn. Pl. Econ. 10 (1830). *Limnochloa cauduciflora* Turcz. in Trin. Mém. de l'Acad. de St. Pétersb. Sér. VI. v. Bot. 185 (1840), Reprint 19 (1839). *Z. aquatica* Benth. Journ. Linn. Soc. xix. 54 (1881) in part; Henry, Trans. Asiat. Soc. Jap. xxiv. Suppl. 107 (1896); Hackel, Bull. Herb. Boiss. ser. 1, vii. 646 (1899) and ser. 2, iii. 502

[1] See Brown & Scofield, Bull. no. 50 of the Bur. Pl. Ind. (1903). Plate V of this bulletin shows this plant and typical *Z. aquatica*. The difference in spread of the panicle of the two phases, here stressed, is not constant in the collection at the Gray Herbarium, but in this plate the spikelets of the plant in Fig. 2 may be seen to be decidedly thicker than in that of Fig. 1. Plate IV, Fig. 1, and Plate VII, C, show the spikelets of var. *interior*.

(1903); Rendle, Journ. Linn. Soc. xxxvi. 345 (1904) in part; Matsumura, Index Pl. Jap. ii. 87 (1905); Nakai, Fl. Kor. ii. 352 (1911); not L. *Z. aquatica*, var. *latifolia* Komarov, Fl. Manshur. i. 261 (1901).—Eastern Siberia, China and Japan. There is a full discussion of this species by Stapf, l. c. *Z. latifolia* as published by Turczaninow was a *nomen nudum*, but Stapf took up this name in 1909, thus validating it.

Excluded Names and Species.

Z. aquatica Willd. Sp. Pl. iv. 394 (1803) = Phragmites communis (L.) Trin. The author excludes the Gronovian plant, and gives the only habitat as Jamaica.

Z. aquatica Link, En. Pl. ii. 391 (1822) = Phragmites communis (L.) Trin.

Zizania ? aristata Kunth, Rev. Gram. i. 8 (1829) = Hygroryza aristata Nees.

Z. bonariensis Balansa & Poitrass, Bull. Soc. Hist. Nat. Toul. xii. 228 (1878) = Zizaniopsis bonariensis Speg.

Z. ciliata Spreng. Syst. Veget. ii. 136 (1825) = Leersia hexandras Sw.

Z. fluitans Michx. Fl. Bor.-Am. i. 75 (1803) = Hydrochloa fluitans Nash.

Z. lenticularis Michx. ex Steud. Nom. 898 (1821) is a *nomen nudum*, published without description or reference.

Z. microstachya Nees, ex Trin. in Mém. Acad. Pétersb. Sér. VI. v. Sc. Nat. ii. 183 (1839), Reprint 17. = Zizaniopsis microstachya Doell.

Z. miliacea Michx. Fl. Bor.-Am. i. 74 (1803) = Zizaniopsis miliacea Doell. & Aschers.

Z. natans Bosc ex Trin. in Mém. Acad. Pétersb. Sér. VI. v. Sci. Nat. ii. 186 (1839), Reprint, 20. = Hydrochloa carolinensis Beauv.

Z. nutans Steud. Nom. ed. II. ii. 799 (1841) = Hydrochloa carolinensis Beauv.

Z. palustris Rasp. Ann. Sci. Nat., Sér. I. v. 452 (1825) = Coleanthus subtilis Roem. & Schult.

Z. Retzii Spreng. Syst. Veget. ii. 136 (1825) = Hygroryza aristata Nees.

Z. subtilis Rasp. l. c. 458 = Coleanthus subtilis Roem. & Schult.

Z. terrestris L. Sp. Pl. 991 (1753) = Scleria **terrestris** (L.) n. comb. *Zizania terrestris* L. Sp. Pl. 991 (1753); Willd. Sp. Pl. iv. 396 (1805). *Scleria elata* Thwaits, Enum. Pl. Zeylandie, 353 (1864); Böck. Linnaea, xxxviii. 487 (1874); Clarke in Hooker, Fl. Brit. Ind. vi. 690 (1894); Trimen, Fl. Ceylon, v. 97 (1900); Ridley, materials for a Flora of the Malayan Peninsula, iii. 114 (1907).

Linnaeus based *Zizania terrestris* on the *Katou-Tfjolam* of the Hortus Malabarensis, which has a good plate illustrating clearly the

plant known as *Scleria elata*, so this combination becomes necessary under the International Rules. There are apparently two well-marked varieties of this species. S. TERRESTRIS, var. **latior** (Clarke) n. comb. *S. elata*, var. *latior* Clarke in Hooker, Fl. Br. Ind. vi. 690 (1894). S. TERRESTRIS, var. **decolorans** (Clarke) n. comb. *S. elata*, var. *decolorans* Clarke l. c.

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FURTHER NOTES ON BRITISH COLUMBIA ALGAE.

WM. RANDOLPH TAYLOR.

IN 1921 the writer made a camping trip through portions of the mountains of British Columbia with Dr. M. H. Jacobs, collecting algae and bryophytes as much as possible.[1] During the past season under the same leader he was able to visit other portions of this territory and to secure further collections. The party entered the Selkirk Mountains from Golden, B. C., in late August and traversed successively parts of Cañon Creek, the Spillamacheen River, Grizzly Creek and the Beaver River, passing between the first three by passes in which branches of these streams had their sources. Camps were made at various points on the North Fork of Cañon Creek giving opportunity to visit several snow fields and small glaciers feeding this stream, and to visit that fork of Grizzly Creek which headed up with the North Fork. This is an entirely different Cañon Creek from that visited in 1921 near Revelstoke. From a camp on the Spillamacheen a visit was paid to Prairie Mountain, which lies between the upper part of that stream and the Beaver River. This is a long grassy ridge, comparatively low, (6–7000 feet) with a few streams and springs which proved particularly rich. The party finally left this portion of the country at Connaught on the Canadian Pacific Railroad. A short trip was also made up the Yoho Valley at Field and another in the neighborhood of Lake Louise in Alberta, but little collecting was done on these trips. Material was secured under much the same difficulties as on the previous trip and cared for in the same way.

Instead of the rigorous weather conditions of 1921 the party in 1923 was favored with clear skies and a warm sun, so that the pools in the

[1] Taylor, W. R. Notes on some algae from British Columbia. RHODORA **24**: 101–111. 1922.

higher country only became slightly ice-coated at night. As a result the algae were in a more vigorous state, and many forms could be identified which were missed on the previous trip. Almost all the collecting was done in the open parkland and the alpine zones, that is from 5500 feet to permanent ice and snow. From lack of a barometer on this trip it is impossible to give very close approximations of the altitudes at which the different species were found. The small lakes which were at times found near the glaciers and snow patches and above the general grassland proved uniformly barren of algae which could be detected without a plankton net. The pools and rivulets in the meadowland were, however, very rich indeed, and as was found previously, very distinct in their individual floras This individuality probably largely explains the considerable differences between the forms secured on the two trips.

The small alpine bog pools generally had a scum of partly decayed *Mougeotia, Zygnema,* filamentous blue-greens and unicells, while the banks and bottoms were often coated with *Scytonema, Schizothrix* and *Nostoc.* In the flats below the glaciers a considerable growth of filamentous greens (mostly sterile *Zygnema* and *Mougeotia*) covered the glacial silt among the rocks. Lower where the water fell more rapidly the rocks were often coated with such algae as *Dichothrix* and *Amphithrix.* The former was especially notable in the Yoho Valley where in one stream in particular the rocks were entirely covered with the calcareous crust and nodules of *D. gypsophila.* A little lower in the parkland area and down the streams well into the forest *Hydrurus* covered the stones in great masses. The heavy growth of *Cladophora* which is so familiar in the eastern states appeared to be absent.

As the study of the collections of material made in 1923 was finished there came to hand a study by K. M. Ström of the alpine algae of the Sarek Mountains.[1] Based on quite extensive collections it affords interesting material for comparison with the flora in British Columbia. Plankton-net gatherings made a valuable addition to the list, which also includes some 219 desmids. Excluding desmids and peridineae he reports about 100 species, about as many as the writer has secured in British Columbia. The floras of the two districts seem to be of approximately equal richness. Undoubtedly a study in the field of living material would add greatly to these lists. Many of the forms which were abundant in British Columbia were important

[1] Ström, K. M. The algae-flora of the Sarek Mountains. Naturwissensch. Untersuch. Sarekgebirges Schwedisch-Lappland **3**: 437–521. 1923.

elements in the Sarek Mountains, as *Chroococcus turgidus, Merismopedia glauca, Nostoc commune, Synechococcus aeruginosus, Tolypothrix lanata* and *Hydrurus foetidus*. In some cases it seems that somewhat different species fill corresponding places: *Glococapsa magna* in British Columbia seems to replace *G. sanguinea* in the Sarek Mountains, *Scytonema myochrous* in large part replaces *S. mirabile* and *Batrachospermum moniliforme, B. vagum keratophytum*. On the other hand some of the algal curiosities are common to both districts: *Prasiola fluviatilis, Pediastrum tricornutum alpinum*.

The following are the species found in 1923:

MYXOPHYCEAE

AMPHITHRIX JANTHINA (Mont.) B. & F. Forming a dark reddish coating on rocks in Cañon Creek in the forest and in alpine rivulets near the source of Grizzly Creek. Locally abundant.

ANABAENA AFFINIS HOLSATICA Lemm.? Rivulet near summit of Prairie Mountain. Scarce

ANABAENA FLOS-AQUAE (Lyngb.) Bréb. In parkland pools of the Cañon Creek valley and in a rivulet near the summit of Prairie Mountain. Scarce

ANABAENA INAEQUALIS (Ktz.) B. & F. In pools and among wet moss by streams, Cañon Creek and on Prairie Mountain. Frequent.

ANABAENA OSCILLARIOIDES Bory. In pools and streams, Prairie Mountain. Scarce.

APHANOCAPSA GREVILLEI (Hass.) Rich. Pools, parkland of Cañon Creek.

APHANOTHECE PALLIDA (Ktz.) Rabenh. Generally distributed; Cañon and Spillamacheen watersheds.

APHANOTHECE SAXICOLA Naeg. Pools, parkland; Prairie Mountain Cañon Creek and Spillamacheen valleys. Scarce.

CALOTHRIX PARIETINA (Naeg.) Thuret. Generally distributed; Cañon, Grizzly and Spillamacheen watersheds.

CHAMAESIPHON FUSCUM (Rost.) Hansg. With *Amphithrix* on rocks in rivulet near head of Grizzly Creek.

CHROOCOCCUS MACROCOCCUS (Ktz.) Rabenh. Parkland pools, Cañon Creek, scarce.

CHROOCOCCUS MINUTUS (Ktz.) Naeg. Generally distributed, Cañon and Spillamacheen watersheds.

CHROOCOCCUS TURGIDUS (Ktz.) Naeg, Generally distributed,

Cañon and Spillamacheen watersheds. On a flooded rock by Cañon Creek in great abundance and the major element in the association.

COELOSPHAERIUM NAEGELIANUM Unger. Pools, parkland, Cañon Creek, scarce.

COELOSPHAERIUM KUTZINGIANUM Naeg. In a spring on Prairie Mountain, scarce.

DICHOTHRIX GYPSOPHILA (Ktz.) B. & F. In a stream on the flank of Prairie Mountain, scarce; abundant in streams near Twin Falls and the Yoho River, Field.

DICHOTHRIX ORSINIANA (Ktz.) B. & F. Abundant in rivulets on the east flank of Prairie Mountain.

GLOEOCAPSA ALPINA (Naeg.) Brand. Rivulet, east side of Prairie Mountain, scarce. Among Trentepchlia and other algae, Yoho Valley, abundant.

GLOEOCAPSA MONTANA Ktz. Frequent and widely distributed. Cañon and Spillamacheen watersheds.

GLOEOTHECE FUSCO-LUTEA Naeg. In parkland pools, Cañon Creek and Prairie Mountain.

HAPALOSIPHON DELICATULUS W. & G. S. West. Among muck in pool, Parkland, Cañon Creek, scarce.

HYPHEOTHRIX CALCICOLA (Ag.) Rabenh.? On rocks and in pools, Cañon Creek and Prairie Mountain.

MERISMOPEDIA GLAUCA (Ehrb.) Naeg. Pools, parkland, Cañon Creek and Prairie Mountain, frequent in some spots.

MERISMOPEDIA PUNCTATA Meyen. Pools, parkland, Cañon Creek and Prairie Mountain, scarce.

NODULARIA HARVEYANA (Thw.) Thuret? Among moss in a pool, parkland, Cañon Creek.

NOSTOC CAERULEUM Lyngb. Among muck in parkland pool, Cañon Creek, scarce.

NOSTOC COMMUNE Vauch. Frequent and generally distributed. In Duchesnay Lake, near Field, in large masses.

NOSTOC MACROSPORUM Menegh. In red surface mud from a dried pool, parkland, Cañon Creek.

NOSTOC MICROSCOPICUM Carm. Frequent and widely distributed. Occasionally the major item in parkland pool muck.

NOSTOC PUNCTIFORME (Ktz) Hariot. In muck from banks of pools, Cañon Creek and Prairie Mountain, scarce.

OSCILLATORIA AMOENA (Ktz.) Gom. Forming a blue-green coating

on muck or stones in rivulets or among moss, lower Cañon Creek valley.

Oscillatoria chalybea Mertens. Wet rocks and among mosses, parkland of Cañon Creek and Prairie Mountain.

Oscillatoria formosa Bory. Wet rocks and among mosses, parkland of Cañon Creek and Prairie Mountains.

Oscillatoria princeps Vauch. In a parkland pool among mosses, Cañon Creek.

Oscillatoria splendida Grev. In a parlkand pool among mosses, Cañon Creek.

Schizothrix Sp.? Abundant in red surface mud from a dried pool, parkland, Cañon Creek.

Scytonema myochrous (Dillw.) Ktz. The major item among moss and over bottom mud of several parkland pools in Cañon Creek valley and on Prairie Mountain. Occasional in many collections.

Stigonema informe Ktz. From the bank of a rivulet on the east side of Prairie Mountain.

Stigonema ocellatum (Dillw.) Thuret. Abundant in a few pools, parkland of Cañon Creek and the Spillamacheen.

Synechococcus aeruginosus Naeg. Occasional in muck in parkland pools, widely distributed.

Tolypothrix lanata (Desv.) Wartm. Occasional in muck in parkland pools, in two cases in Cañon Creek valley the major item.

Tolypothrix penicillata (Ag.) Thuret. On stones in side pools of rivulets, Cañon Creek valley and on Prairie Mountain; the major element where found.

Chlorophyceae

Ankistrodesmus falcatus (Corda) Ralfs. Pools, parkland of Cañon Creek and Prairie Mountain, scarce.

Asterococcus superbus (Cienk.) Scherffel. Pools on Prairie Mountain and in the Spillamacheen Valley, scarce.

Chaetophora elegans (Roth) Ag. Abundant in a watering trough by the road from Golden to Windermere.

Chaetosphaeridium globosum (Nordst.) Kleb. On algae in pool, parkland, Cañon Creek. Scarce.

Chlamydomonas nivalis (Baur) Wille.? Forming Red Snow below a ittle glacier on the west side of Cañon Creek valley. Red Snow was also seen near the head of a branch of the Spillamacheen.

Coelastrum proboscideum Bohlin. Frequent in a spring on the east side of Prairie Mountain near the rocky summit.

Coleochaete orbicularis Pringsh. Rare in a pool in parkland, Cañon Creek.

Dimorphococcus cordatus Wolle. Rare, with *Coelastrum*.

Herposteiron Vermiculoides (Wolle) Collins. On other algae, parkland pools, Cañon Creek, scarce

Hormotila mucigena Borzi. Among other algae in a parkland pool, Cañon Creek, rare

Oedogonium longatum Ktz.? Fruiting among mosses in a pool in parkland, Cañon Creek

Oocystis solitaria Wille. On mud, rivulet on Prairie Mountain, rare.

Oocystis solitaria major Wille. In parkland pools, Cañon Creek valley and Prairie Mountain. Scarce.

Pediastrum Boryanum (Turp.) Menegh. In a spring on Prairie Mountain.

Pediastrum Boryanum longicorne Racib. In pools on Cañon Creek and Prairie Mountain.

Pediastrum tricornutum alpinum Schmidle. In a spring and pools on Prairie Mountain.

Scenedesmus abundans (Kirch.) Chodat. In a spring on Prairie Mountain.

Scenedesmus arcuatus Lemm. With the above.

Scenedesmus bijuga (Turp.) Lagerh. With the above.

Scenedesmus quadricauda (Turp.) Bréb. With the above.

Schizochlamys delicatula W. West Floating in a pool in parkland, Cañon Creek, the major item. Among mosses in another spot.

Trentepohlia aurea (L.) Mart. On rocks near foot of Twin Falls, Yoho Valley near Field. Not noted as abundantly as on trip of 1921. It was omitted from the list in the report of that trip through an oversight.

Vaucheria longipes Collins. On a shale bank beside Cañon Creek in parkland, abundantly fruiting.

Heterokontae

Ophiocytium parvulum (Perty) A. Br. In pools Cañon Creek valley and on Prairie Mountain.

TRIBONEMA BOMBYCINA TENUIS Hazen. Occasional in pools in the Cañon Creek valley and on Prairie Mountain.

FLAGELLATAE

HYDRURUS FOETIDUS (Villm.) Kirchn Occasionally covering rocks in rivulets entering Cañon Creek and Grizzly Creek to the exclusion of other vegetation.

RHODOPHYCEAE

LEMANEA FUCINA Bory. A rock in a large tributary which entered the Spillamacheen from the east across Prairie Mountain from Glacier Circle was covered below the water level with a fine fruiting growth of this *Lemanea*.

UNIVERSITY OF PENNSYLVANIA.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLIX.

COMPOSITAE.

SONCHUS.

S. ARVENSIS L. Waste places; frequent, especially near the sea.

S. ARVENSIS L., var. GLABRESCENS Wimm. & Grab. One plant in garden for one year, Hingham (*C. H. Knowlton*, Aug. 18, 1918). Specimen in herb. C. H. Knowlton. Adventive from Europe.

S. ASPER (L.) Hill. Rich moist soil in waste places, frequent.

S. OLERACEUS L. Waste ground, rather common.

S. OLERACEUS L., forma LACERUS (Willd.) G. Beck. Dumping ground near Mt. Auburn, Cambridge (*B. L. Robinson*, Aug. 22, 1897). Specimens in herb. Gray and N. E. Botanical Club. A European waif.

TANACETUM.

T. VULGARE L. Waste places, common; especially abundant in Boston.

T. VULGARE L., var. CRISPUM DC. Persistent around old places, and spreading to waste ground, rare.

TARAXACUM.

See Earl Edward Sherff, Bot. Gaz. lxx. 329–359, 1920.

T. VULGARE (Lam.) Schrank. (Includes *T. officinale* Weber and var. *palustre* (Sm.) Blytt of Gray's Manual, 7th Ed.) Fields, lawns and roadsides, very common throughout.

T. LAEVIGATUM (Willd.) DC. (*T. erythrospermum* Andrz. of Gray's Manual, 7th Ed.) Ledges and dry soil, frequent.

TRAGOPOGON.

T. PORRIFOLIUS L. Casual at Wellesley Hills (*F. W. Hunnewell*).

T. PRATENSIS L. Fields and waste places, rare.

TUSSILAGO.

T. FARFARA L. Wet places, usually in clayey soil, rare (11 stations from Amesbury to Scituate).

VERBESINA.

V. ENCELIOIDES (Cav.) B. & H., var. EXAURICULATA Robinson & Greenman. From wool washings, Parker River Mills, Georgetown (*Mrs. C. N. S Horner*, no date). Specimen in herb. N. E. Botanical Club.

VERNONIA.

V. FASCICULATA Michx. Medford (*L. L. Dame*, August, 1886; *Mrs. P. D. Richards*, Oct. 10, 1887). Specimens in herb. Gray and N. E. Botanical Club.

V. noveboracensis Willd. Swamps and wet places; frequent from Medford, Weston, Newton and Concord south.

XANTHIUM.

See Millspaugh & Sherff, Field Mus. Publ. Bot. iv. 9–49, pl. 7–13, 1919.

X. AMBROSIOIDES Hook. & Arn. S. Boston (*C. E. Perkins*, July, 1878). Specimen in herb. N. E. Botanical Club. Native of South America.

X. chinense Mill. (*X. canadense* of Gray's Manual, 7th Ed., *not* Mill.) Sandy and gravelly shores; Lawrence, Boston, Wayland.

X. echinatum Murr. Sandy shores and waste places from Newburyport to Duxbury, mostly near salt water.

X. italicum Moretti. (X. *commune* Britton.) Sandy shores and waste places. occasional.

X. PENNSYLVANICUM Wallr. Waste places; Lawrence (*A. S. Pease*,

Sept. 18, 1901); Back Bay, Boston (*T. O. Fuller*, Sept. 25, 1885); St. Botolph St., Boston (*E. F. Williams*, Sept. 13, 1895). Introduced from middle states.

X. spinosum L. Waste places, especially near mills, rare (12 stations).

X. strumarium L. Woolwaste, N. Chelmsford (*W. P. Alcott*, according to Dame & Collins, Fl. Middlesex Co. 51, 1888); Crescent Beach, Revere (*M. L. Fernald*, Oct. 20, 1912).

X. Wootoni Cockerell. Made land, S. Boston flats (*W. Deane*, Oct. 4, 1909; *W. S. Ripley, Jr.*, Oct. 8, 1915). Adventive from southwestern United States.

C. H. Knowlton
Walter Deane
} *Committee on Local Flora.*

Saxifraga Aizoon on Mt. Ktaadn.—On August 17, 1923, eight members of the Appalachian Mountain Club made the ascent of the Chimney on Mt. Ktaadn, Maine. On starting up a steep bank to avoid climbing in the brook, the writer came upon several colonies of *Saxifraga Aizoon* Jacq. The plants looked like some sort of cactus and quite out of place in that cold ravine. Although they seemed thrifty, there was no sign of any flowers, old or young. The larger plants had sent out new ones on runners so that when I attempted to gather a specimen, many others came up with it. This Saxifrage is a plant commonly of calcareous regions, but Ktaadn is granitic. The specimens collected, which are the first from Maine, are in the Gray Herbarium.

There was colony after colony of *Saxifraga stellaris* L. var. *comosa* Willd. all the way to the top of the Chimney. We found it also near the top of the west wall of the Great Basin.—Rachel L. Lowe, Portland, Maine.

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The date of the July issue (unpublished as this goes to press) will be announced later.

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 26. September, 1924. No. 309.

A NOTE ON STELLARIA PUBERA MICHX.

C. A. Weatherby.

An attempt to name accurately a *Stellaria* found growing as an introduced plant at Wilton, Conn., by Miss Anna E. Carpenter and persistent there for at least six years, has involved me in a survey of the forms referred to *S. pubera*, which, though necessarily somewhat cursory, has yielded results perhaps worth recording. Through the kindness of Dr. W. R. Maxon, I have had the privilege of examining the material of *S. pubera* in the United States National Herbarium; and Mr. C. C. Deam has generously lent me the fine representation of the species in his private herbarium.

Although varying much in leaf-form, the great majority of specimens from east of the Alleghanies are constant in the following characters. The median leaves of the flowering stems are sessile or subsessile and not over 4 cm. long. The larger, oblong-lanceolate to broadly oval leaves of the sterile shoots are likewise sessile or subsessile. The sepals are 4–5 mm. long (rarely a little longer), broadly ovate to oblong-ovate or rarely oblong-lanceolate, obtuse to acutish, and, though often pilose on the back, are not ciliate or only slightly and inconspicuously so at the very base. They are usually shorter than the petals. This common form is, as indicated by Michaux's description and his type locality, no doubt typical *S. pubera*.

At scattered stations nearly throughout the range of the species occur larger plants in which the oblong-lanceolate to broadly oval median leaves of the few-flowered fertile stems are 6–11 cm. long and the sepals generally 5–6 mm. long. This is *Alsine pubera ten-*

nesseensis Mohr, as shown by his description and his type specimen (now in the U. S. Nat Herb.) collected at Sheffield Landing, Ala., June, 1893, and labelled "v. *tennesseensis*" by him.

The status of this form is not wholly clear to me; but the specimens at hand appear to be either luxuriant individuals or late, semi-sterile shoots. The latter interpretation is borne out by the following facts. Some of the specimens, including Mohr's type, were collected in June and July, well past the usual flowering time of the species. A sheet collected near Baltimore, Md., July 7, 1897 (U. S.), is labelled by the collector, Adam Seitz, "Stellaria pubera Michx. in its second form." A specimen collected at Waynesville, N. C., by T. G. Harbison in May, 1897 (G), shows a large-leaved shoot in flower and two stems of entirely typical *S. pubera* in immature fruit proceeding from the same root. From the data at hand, I cannot see that this form deserves any taxonomic recognition.

West of the Alleghanies, ranging (so far as the specimens seen indicate) from northern Alabama to southern Ohio and southeastern Indiana, is found a much more marked variant. In it at least the lower leaves of the flowering stems and all but the uppermost leaves of the sterile ones have the oval to broadly ovate blades abruptly contracted into margined petioles or petiolar bases 1–2 cm. long. The sepals are 7.5–11 mm. long, acute or acuminate; they equal or exceed the petals and at least the outer are conspicuously long-ciliate on the lower half. This, as shown by the description and collections cited, is *Stellaria pubera*, subsp. *silvatica* Béguinot. Small's excellent diagnosis leaves no doubt that it is also his *Alsine tennesseensis*, to which he has erroneously applied Mohr's name.

The characters of pubescence and leaf-form adduced by Béguinot do not correlate in a large series of specimens; those of calyx and leaves, however, are associated with a high degree of consistency. The plant constitutes a well-marked geographic variety. Perhaps it even deserves the specific rank accorded it by Small; but its characters seem hardly positive enough for that. Occasional individuals of otherwise typical *S. pubera* show a tendency to develop petiolar leaf-bases; in a few cases the sepals are narrow, acute, and more or less ciliate; and in length of sepals different specimens show an unbroken progression from 5 to 11 mm. One plant in particular, collected by A. H. Curtiss in Fairfax Co., Va. (G), and showing ovate,

short-petioled leaves and broadly ovate, somewhat ciliate sepals 7 mm. long, is almost exactly intermediate between species and variety.

I have not been able to identify Béguinot's subsp. *homotricha*.

The conclusions here reached may be summarized as follows. Prof. Fernald (RHODORA xxi. 7–9 [1919]) has well set forth the reasons why the generic name *Stellaria* is to be preferred to *Alsine* for the species of this group.

* Median leaves of both sterile and flowering shoots rounded or narrowed at the sessile or subsessile base, oblong-lanceolate to oval; sepals 4–6 mm. long, obtuse or acutish, shorter than the petals, not at all or only inconspicuously ciliate.

STELLARIA PUBERA Michx. Fl. Bor. Am. i. 273 (1803). *Alsine pubera tennesseensis* Mohr, Cont. Nat. Herb. vi. 499 (1901). *Alsine tennesseensis* Small, Fl. S. E. U. S. 422 (1903), as to name-bringing synonym.—N. J. to Ind., south to Ga. and Ala.

** Median leaves of sterile shoots abruptly contracted into petioles 1–2 cm. long, oval to broadly ovate; sepals 7.5–11 mm. long, acute or acuminate, equalling or exceeding the petals, at least the outer conspicuously ciliate on the lower half.

Var. **silvatica** (Béguinot), n. comb. *S. pubera*, subsp. *silvatica* Bég. Nuov. Giorn. Bot. Ital. n. s. xvii. 385 (1910). *Alsine tennesseensis* Small, l. c., as to plant described.—CONNECTICUT (where introduced); dooryard, Wilton, April, 1923, *Anna E. Carpenter* (G). OHIO: Chillicothe, May, 1885, *H. T. Safford* (US); near Cincinnati, April 27, 1879, *C. G. Lloyd* (US). INDIANA: wooded ravine near Lawrenceburgh, Dearborn Co., May 10, 1910, *Deam* (herb. C. C. Deam). KENTUCKY: cliffs of the Kentucky River, May, 1830, *H. H. Eaton* (G). TENNESSEE: bluffs along the Tennessee River, Knoxville, April, 1894, *S. N. Bain* (US); same locality, April, 1895, *Ruth* (G).

GRAY HERBARIUM.

THE NAME OF THE SPEARMINT.

S. F. BLAKE.

IN a recent paper in this journal, Mr. O. A. Farwell[1] has sought to show that the name *Mentha spicata* L., in general use for the spearmint for many years, belongs to the horse mint of Europe, usually called *M. longifolia*, and that the spearmint should be called *M. viridis*. In this interpretation of the Linnaean name Farwell departs

[1] "The correct name for the spearmint," RHODORA **26**: 19–22. 1924.

not only from the usage of Hudson,[1] the first reviser of the complex Linnaean species *M. spicata*, but also from that of such critical modern students of the European flora as H. and J. Groves (Babington's Manual, ed. 9), Britten and Rendle (List of British Seed-plants, 1907), Schinz and Keller (Flora der Schweiz, ed. 4, 1923), and Wilmott (Babington's Manual, ed. 10), as well as from the practice of all recent American authors.

In the first edition of the Species Plantarum (1753) Linnaeus described *Mentha spicata* with three varieties—α. *viridis*, β. *longifolia*, and γ. *rotundifolia*. Hudson (1762), the next author to deal with these plants, raised the three varieties to specific rank. His species, corresponding to the Linnaean varieties in the order named, were called *M. spicata*, *M. longifolia*, and *M. rotundifolia*. In the second edition of the Species Plantarum (1763), Linnaeus split his *Mentha spicata* of 1753 into three species, as Hudson had done, but dropped the name *spicata*. Var. *longifolia* of 1753 became *Mentha sylvestris*, var. *viridis* became *M. viridis*, and var. *rotundifolia* became *M. rotundifolia*. As the pertinent descriptions in both editions of the Species Plantarum are copied in full by Mr. Farwell, it is unnecessary to reproduce them here.

Mr. Farwell evidently considers that the name *Mentha spicata*, as used by Linnaeus, represented an entity different from the three varieties included under it. His sole argument for the transfer of the name to the plant called *M. sylvestris* in the second edition of the Species Plantarum is given as follows: "of the eight citations under *M. sylvestris* six are from the var. *longifolia* and one from *M. spicata* the other being extraneous," while "of the seven citations under *M. viridis* 5 are from var. *viridis* (none from *M. spicata*), the others being extraneous." The fact that, of the two references given under *M. spicata* proper in 1753, the only one that is repeated in 1763 is placed under *M. sylvestris*, is considered to show that "*M. spicata* formed a part of *M. sylvestris* and not at all of *M. viridis*."

The reference on which Mr. Farwell lays so much stress is that from the Hortus Upsaliensis, "*Mentha floribus spicatis, foliis oblongis serratis*." Under this name Linnaeus combined, as var. α and var. β, two plants which he had previously treated as species in the Hortus Cliffortianus. The Hortus Upsaliensis name, then, was merely a

[1] Fl. Angl. ed. 1, 221. 1762.

descriptive phrase intended to cover the common characters of the two varieties of which it was composed. The *Mentha spicata* of the first edition of the Species Plantarum was made up of the same two varieties and an additional one, and the Hortus Upsaliensis name was properly taken by Linnaeus as his specific phrase, covering as it did the two principal constituents of his species *M. spicata*. In this sense, and in this sense only, is Mr. Farwell right in saying that "*M. spicata* was founded on Hort. Ups. 168 [sp. no. 2]." The other citation under *M. spicata* proper, "Mentha sylvestris, longioribus nigrioribus & minus incanis foliis. Bauh. pin. 227," was omitted in the second edition of the Species Plantarum. W. Sole, in his "Menthae Brittanicae" (1798, p. 7), refers it to his *M. sylvestris* which, according to Baker (Journ. Bot. **3**: 235. 1865), is *M. rotundifolia*, Sole's *M. rotundifolia* being *M. alopecuroides* Hull.

The explanation of Linnaeus' course is thus sufficiently clear. The name *Mentha spicata* of 1753 was simply a covering name for the three varieties included under it, as is shown both by his division of the species into vars. α, β, and γ, and by his use as a specific phrase of a polynomial under which he had previously combined two of these three varieties. In 1763, realizing that his three varieties were specifically distinct, he dropped the name *spicata* (in which course he was followed by most botanists for about a century) and raised the varieties to species under the names *M. viridis*, *M. sylvestris*, and *M. rotundifolia*. The principal reference given under *M. spicata* in 1753 was placed under *M. sylvestris* (presumably because var. α of the Hortus Upsaliensis reference represented this plant), but this action can by no means be taken to indicate that Linnaeus considered *M. spicata* referable *in toto* to *M. sylvestris*.

The single argument advanced in support of the transfer of the name *M. spicata* to the plant usually known as *M. longifolia* is thus shown to be invalid, while the customary application of the name is supported by two further points:—the fact that var. α of *M. spicata*, which, other things being equal, would be considered to typify the species, is var. *viridis;* and the fact that Hudson, the first reviser of the complex Linnaean species, retained the name *M. spicata* for the spearmint (*M. spicata* L. α. *viridis* L.).

It happens that the name of the spearmint is mentioned in the International Rules of Nomenclature as an example under Art. 49,

but with an authority assigned that is not in accord with present usage. The statement there made is as follows: "*Mentha spicata* L. var. *viridis* L. *Sp. Pl.*, ed. 1, p. 576 (1753) was raised to the rank of a species by Hudson, and must be called *Mentha spicata* Huds. *Fl. Angl.* ed. 1, 221 (1762) not *Mentha viridis* L. *Sp. Pl.*, ed. 2, p. 804 (1763)." It is perhaps impossible to decide whether var. *viridis* "was raised to the rank of a species by Hudson," as his first reference might indicate, or whether he considered the Linnaean *M. spicata* to be typified by its var. α. *viridis* and adopted his specific name accordingly. At any rate, it is certain that the plant can not be called "*Mentha spicata* Huds." under any code of nomenclature in present use.

The customary citation of the accepted names of the two other mints described as varieties of *M. spicata* by Linnaeus, as *Mentha longifolia* (L.) Huds. and *M. rotundifolia* (L.) Huds., is based on the natural inference that Hudson's names were founded on those of Linnaeus. It is by no means clear, however, that this method of citation is correct. It is obvious that Hudson had the Species Plantarum before him when writing his descriptions. The omission of his customary reference to that work under these two species, however, involves the omission of anything that could be considered a "name-bringing synonym," since the citations from pre-Linnaean authors common to the two works can certainly not be regarded in that light. In neither the International Rules nor the American Code is there any statement as to the definiteness of reference to the earlier name required in nomenclatorial transfers in order to justify the use of a parenthetical authority. The question is a minor one, and very likely was not considered by the framers of either code. The commonly used expression "name-bringing synonym" certainly implies some sort of citation, and the fairly well established practice of not reading into a work more than the author himself put there points in the same direction. The mints described in the first edition of the Species Plantarum as *Mentha spicata*, α. *viridis*, β. *longifolia*, and γ. *rotundifolia* are then properly designated as follows:

MENTHA SPICATA L. Sp. Pl. **2**: 576. 1753.

Mentha spicata α. *viridis* L. Sp. Pl. **2**: 576. 1753.

Mentha viridis L. Sp. Pl. ed. 2, **2**: 804. 1763.

MENTHA LONGIFOLIA Huds. Fl. Angl. 221. 1762.
Mentha spicata β. longifolia L. Sp. Pl. **2**: 576. 1753.
Mentha sylvestris L. Sp. Pl. ed. 2, **2**: 804. 1763.
MENTHA ROTUNDIFOLIA Huds. Fl. Angl. 221. 1762.
Mentha spicata γ. rotundifolia L. Sp. Pl. **2**: 576. 1753.

BUREAU OF PLANT INDUSTRY, WASHINGTON, D. C.

NOTES ON THE PLANTS OF HINGHAM, MASSACHUSETTS.

CLARENCE H. KNOWLTON.

WHEN the History of Hingham was published by the town in 1893, there was included in it "The Botany of Hingham," by Thomas T. Bouvé, and "The Trees and Shrubs of Hingham," by his son, Edward T. Bouvé. Both of these men were long connected officially with the Boston Society of Natural History. Charles J. Sprague, the artist-botanist, coöperated with the elder Bouvé in the preparation of the Flora, and local botanists also assisted. The list is based on the sixth edition of Gray's Manual (1890).

No less than 877 plants are given, making it a very complete list for an area of 12,973 acres. There seem to be very few errors, although many of the species have subsequently had their names changed, and there have been many new segregates since 1890. Since I came to Hingham in 1908, and since Dr. C. A. Cheever came in 1917, each of us has explored the town, and each of us has kept a check-list of the local flora. There are still many species which we have not checked off, but we have succeeded in finding many of the plants which were reported as rare, and we have added several new species, not merely segregates, to the known flora of the town.

Five of the plants in the flora, *Asclepias verticillata*, *A. tuberosa*, *Gentiana crinita*, *Sarracenia purpurea* and *Sporobolus asper* are apparently extinct, and three others, *Phragmites communis*, *Kalmia latifolia* and *Epigaea repens* are nearly gone, while *Ilex opaca* is making a hard fight against being eliminated by the Christmas spirit.

Along the shore, in salt marsh openings, is an abundance of *Salicornia ambigua*, the perennial, along with the two annual species of the region. The young shoots of this plant, before they root into the sand, are curved, forming almost perfect circles for a few weeks be-

fore they are fully developed. *Atriplex arenarium* is frequent, and *Aster tenuifolius*, with its pretty daisy-like flowers, is in at least one of the marshes. Last fall we were much pleased to find *Bassia hirsuta*,[1] so common in South Boston, sparingly introduced close to the salt water, and near by *Euphorbia polygonifolia* in the sand. There are also a few plants of the big mallow, *Hibiscus Moscheutos*. Just back from salt water grows the pretty pink *Strophostyles angulosa*.

Near the salt marsh, not far from its two parents, there are plants of the hybrid *Solidago asperula*, always an interesting find. At one place, the cottage settlement of Wampatuck, there is an abundance of the rare *S. speciosa*, growing among the low oaks and in the vacant lots. *S. suaveolens* is especially abundant in some places. In the southern part of Hingham there is plenty of *S. rugosa*, var. *sphagnophila*, and one of the commonest species is *S. Elliottii*, which drops out to the north, only to reappear again in Nova Scotia.[2]

Asclepias phytolaccoides is frequent by wooded roadsides, a tall, handsome plant. *A. quadrifolia* is a rarer plant which is sometimes found. *A. verticillata*, the rarest species around Boston, I found in some abundance on ledges when I first came to town, but I have not been able to find it recently. *Triosteum perfoliatum* we found last summer, growing in a thicket on an esker. It was 120 cm. tall, and is in many ways quite different from var. *aurantiacum* (Bickn.) Fames & Wiegand which is commoner in eastern Massachusetts, though it has not been found here. *Ludvigia alternifolia* is a queer plant, growing in two places, one beside a rivulet in dry open woods, the other close to the railway track in the village, as if introduced there.

One of our friends, Mr. Cyril C. Smith, has called our attention to the variation in the number of leaves in the whorls of *Lysimachia quadrifolia*. This is exceedingly abundant in dry open woods, Although the great majority of the plants have four leaves to each whorl, there are numerous variants, having two, three, five, six, and even seven leaves.

One of the best discoveries was *Corallorhiza trifida*, which Dr. Cheever found near a cold spring, a situation similar to the place where it grows in Norwood. *Arethusa bulbosa* was also found by him in a small bog, and in the same bog is *Rhododendron canadense*, a rare

[1] Rhodora xi. 120, 1909; xvii. 176, 1915.
[2] Fernald, Rhodora xxiii. 144, 151, 157, 169, 292. 1921.

plant in Plymouth County. In this same bog Dr. Cheever has also found *Habenaria lacera* and *Calopogon pulchellus*. *Habenaria flava* is another rare orchid we have seen in town.

In one of the swamps is *Carex riparia*, frequent in western Vermont, but not so well known in eastern Massachusetts. It has blue-green leaves, and looks quite distinct from the abundant *C. stricta* and the other sedges in the swamp. On one of the eskers, and in another place in light pine woods, there are good colonies of *C. laxiculmis*.

There are twenty-three kinds of ferns known in town. *Thelypteris simulata*, *Woodwardia virginica* and *W. areolata* are frequent, this association of the three species being characteristic of low woods near the coast as far north as New Hampshire. *Thelypteris Boottii* was for some reason overlooked by the authors of the list in their survey of the town. Dr. Cheever has found one good colony of *Adiantum pedatum*, not on the list. *Lycopodium inundatum* is abundant at one station. *L. annotinum* is on the Bouvé list, and after a careful search was found in two stations a quarter of a mile apart, in deep woods.

All in all we have had a very good time checking up this old list, and we hope to continue our explorations till we have as complete a knowledge of the town flora as did Mr. Bouvé and his associates.

Hingham, Massachusetts.

A NEW VARIETY OF BIDENS HETERODOXA.

Norman C. Fassett.

The fresh-water tidal flats at the mouth of the Kennebec River, in central Maine, extend from a mile above Bath to Augusta, a distance of nearly thirty miles. The lower part of this estuary, and the mouths of the rivers entering it, have been rather extensively explored. Professor Fernald and Mr. Bayard Long have collected along the tidal shores of the Cathance River at Bowdoinham, and the writer has botanized most of the western shore of Merrymeeting Bay. Large collections of *Bidens* made in these regions have consisted of three entities: *B. hyperborea* Greene, varieties *colpophila* (Fernald & St. John) Fernald and *cathancensis* Fernald, and *B. Eatoni* Fernald, var. *kennebecensis* Fernald, the last two being endemic to this estuary system.

Near the head of tide in the Kennebec River, however, in Gardiner, there appears another *Bidens*, which has not been found in the lower part of the estuary. The foliage of this plant resembles that of *B. Eatoni*, var. *kennebecensis*, from which it differs conspicuously in its broadly campanulate involucres and shorter and broader achenes. Its affinities seem to lie rather with *B. heterodoxa* of the Gulf of St. Lawrence region and southern Connecticut. This variety is intermediate in its characters between var. *monardaefolia* of Pocotapaug Lake, Connecticut, and var. *orthodoxa* of the Magdalen Islands, Quebec. From the former it may be distinguished by its much shorter involucral bracts, its smaller fruiting heads, and its consistently retrorsely barbed achenes. From the latter it differs in its strictly two-awned achenes, retrorsely barbed along the margins, and its rarely divided leaves.

BIDENS HETERODOXA (Fernald) Fernald & St. John, var. **interstes**, var. nov., planta 2–3 dm. alta; foliis simplicibus vel rare nonnihil 3-partitis grosse serratis petiolatis, petiolis anguste alatis 1–3 cm. longis; capitulis terminalibus 1–1.3 cm. latis; bracteis exterioribus erectis 1.3–2 cm. longis; achaeniis 5.7–7 × 1.8–2.2 mm. strigosis marginibus retrorse setosis, aristis 2 retrorse setosis.

Plant 2–3 dm. tall: leaves simple or rarely somewhat 3-cleft, coarsely serrate, on narrowly winged petioles 1–3 cm. long: terminal heads 1–1.3 cm. wide: outer involucral bracts ascending, 1.3–2 cm. long: achenes 5.7–7.0 × 1.8–2.2 mm., strigose, retrorsely barbed on the margins; awns 2, retrorsely barbed.—MAINE: at high-tide level along the shores of the Kennebec River, ½ mile below Gardiner, Sept. 18, 1923, *N. C. Fassett*, no. 852 (TPYE in Gray Herb.); tidal shores, Kennebec River, Hatchs Corners, Dresden, Sept. 9, 1924, *N. C. Fassett*, no. 2101.

GRADUATE SCHOOL OF ARTS AND SCIENCES, HARVARD UNIVERSITY.

FLOWERING DATES FOR AMELANCHIER BARTRAMIANA.—After considerable experience in collecting other species of *Amelanchier* in blossom, I began to think it would be necessary to climb a mountain some spring in order to find *A. Bartramiana* in the right condition. It was accordingly a pleasant surprise to me, when driving through Warren, New Hampshire, May 22, 1923, to spy over in the swamp a bush of this characteristic species with white star-like flowers, quite different from *A. laevis*, which was everywhere in the woods and by the roadsides.

The inflorescence consists of two or three flowers coming from a single axil the pedicels sometimes branching. The leaves at this season often have the same reddish tinge which characterizes *A. laevis* and *A. sanguinea*, but the general effect of the shrub, with its snow-white star-shaped flowers, is very different. It is frequently a dense shrub, seldom very tall.

Later the same week I found *A. Bartramiana* in bloom in Barton, Vermont, and still later, May 27, in Brome County, Quebec, rather past its prime. This year I was again much pleased and surprised to find it in bloom on the high sandplains between Ashburnham and Winchendon, Massachusetts, at an elevation of perhaps 1200 feet, on May 21. Crossing the State line, I found it again in Fitzwilliam, New Hampshire, at about the same elevation, and later that week in Marlow, Lempster and Grantham, along the west side highway of New Hampshire.

It is interesting to know that this species, so often associated with mountains and the northern country, is abundant at moderate elevations so far south as these stations. In summer the leaf is always characteristic. The fruit is somewhat pyriform, one to three fruits on long pedicels ripening at the upper axils. I have usually found it after the middle of July.—Clarence H. Knowlton, Hingham, Massachusetts.

A Flora of Springfield, Massachusetts.—The results of active collecting by the botanists of Springfield, Massachusetts, during the last half-century have been published[1] by the Springfield Museum of Natural History. The actual drawing together of the material was chiefly in the hands of the late Luman Andrews, who unfortunately died before the work could be put into final form; and the finishing touches were given the manuscript by the experienced student of the flora of the Connecticut Valley, Mr. C. A. Weatherby. The Catalogue is in conventional and, therefore, thoroughly convenient form. It is accompanied by a detailed map and by ten plates, illustrating noteworthy trees. The native flora of Springfield has naturally suffered the fate of indigenous floras about any large city and the

[1] Museum of Natural History, Springfield, Massachusetts, Bulletin No. 3. *Catalogue of the Flowering Plants and Ferns of Springfield, Massachusetts.* By Luman Andrews and a Committee of the Springfield Botanical Society. 1924.

number of plants of foreign origin is large, although, by what seems an unfortunate lack of any differentiation in type or in statement, they do not stand apart in the Catalogue from the truly native plants. The latter form the element of greatest interest in the Springfield flora, for upon the broad sand plains east of the densely populated section of the city there are isolated stations of several coastal plain or other southern types: *Chamaecyparis, Sagittaria Engelmanniana, Panicum verrucosum, P. albemarlense, Psilocarya scirpoides, Fuirena squarrosa, Scleria reticularis, Orontium aquaticum, Xyris flexuosa, Utricularia resupinata, etc.* It is certainly to be hoped that land values in Springfield will not become so great as to crowd out these really interesting species of the sand plains and pond-margins. However, should that dreaded result of urban development eventually follow we have the satisfaction of knowing that specimens of all the plants listed in the Catalogue are preserved in the herbaria either of the Museum of Natural History at Springfield or of the New England Botanical Club at Cambridge. For its care in thus preserving and in putting on record the known flora of the region the Springfield Museum is to be heartily commended.—M. L. F.

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Farlow Bot. Lab.

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 26. October, 1924. No. 310.

THE FLORA OF PENIKESE, FIFTY YEARS AFTER.

Edited by I. F. Lewis.

(Plates 146 and 147.)

INTRODUCTION.

The island of Penikese, lying in Buzzard's Bay, twelve miles south of New Bedford, is the westernmost of the Elizabeth Islands. It is famous among American biologists as the first home of the Anderson School of Natural History, better known as "Agassiz's Laboratory," the sessions of which were held in 1873–1874. In 1873 a botanical survey of the island was made by one of the brilliant members of the group of students attracted by the Master. It is not very generally known that David Starr Jordan, distinguished as a zoologist and author, began his scientific career with "The Flora of Penikese Island," published in the American Naturalist, volume 8, April, 1874.

The fiftieth anniversary of the foundation of the Agassiz school at Penikese was held in the summer of 1923. At the same time a biological survey of the island was undertaken jointly by workers from the United States Bureau of Fisheries Laboratory and the Marine Biological Laboratory at Woods Hole, Massachusetts. One day was devoted to collection, July 24, and casual visits in August added a few observations. The following collectors undertook the botanical side of the survey:

Marine Algae

Alice E. Brown
Annette Brown
Edward S. Castle
Ralph E. Cleland
Helen Duckworth
Janet P. Jamieson
James B. Lackey
Ivey F. Lewis

Marine Algae (Continued)

Elizabeth L. Mackintosh
Bertha E. Nute
Olga Osterhout
Radcliffe Pike
Ethel G. Stiffler
Wm. Randolph Taylor
Lora S. Weston
William H. Weston, Jr.

Fresh-water Algae

Tracy E. Hazen

Diatoms

Paul S. Conger

Fungi

Helen S. Harper
Robert A. Harper
Margaret Kemp
Neil E. Stevens
William H. Weston, Jr.
Marguerite S. Wilcox

Bryophytes

L. P. Blinks
Sherburne F. Cook
Edith G. Cook

Pteridophytes

Alma G. Stokey

Phanerogams

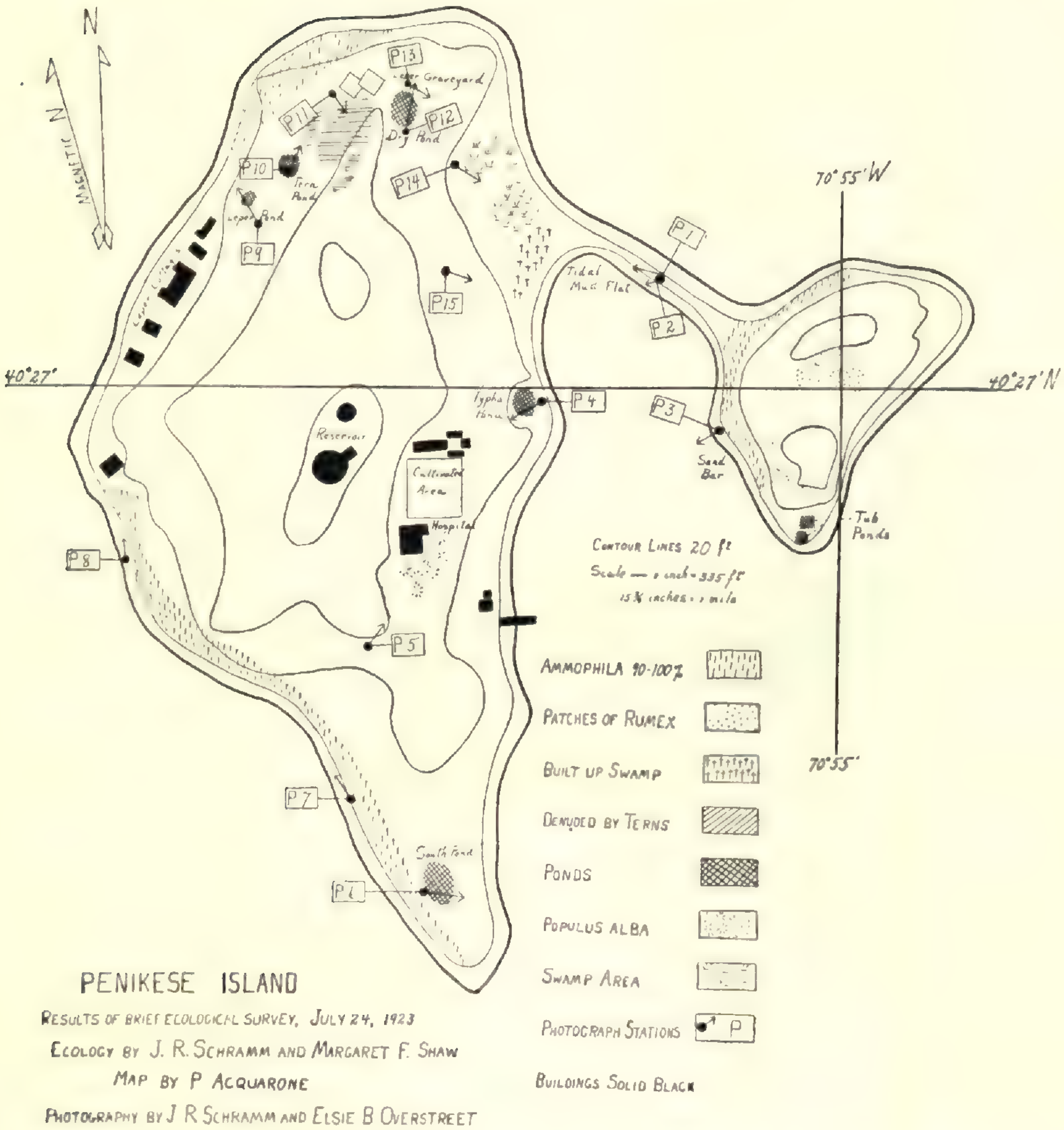
Frederick H. Blodgett
Alice E. Clarke
N. H. Cowdry
John M. Fogg, Jr.
Anne Hof
O. L. Inman
Margaret Sumwalt

Ecology

Paul Acquarone
Elsie B. Overstreet
Jacob R. Schramm
Margaret F. Shaw

The island Penikese is a remnant of the terminal moraine now seen in the Elizabeth Islands. It is about two thirds of a mile long and half as broad, with a broadly spatulate point, for convenience of reference called Tub Point, extending further to the east for another third of a mile. Its contour is dominated by low hills on the main body of the island, with depressions here and there which may be ponds of a rather temporary character (map).

The original vegetation, like that of neighboring islands, is said by Jordan to have been of a forest type, with pitch pine, red cedar, red maple, shagbark, shadbush, poplar birch, hornbeam, and two or three species of sumach. In 1873 there was "no trace left save the rotten roots of a solitary beech stump and a few branches of red cedar



and red maple (?) found buried in the muck of a small swamp." Cutting of the original timber had been followed by the introduction of sheep, which remained on the island until about 1910. From 1905 to 1921 Penikese was used by the State of Massachusetts as the site of a leprosarium. After the removal of the lepers in 1921, the island has been uninhabited except for the caretaker and his wife.

Jordan says that his "list may have a special interest to future students, and also a general interest to botanists, as showing which plants survive a prolonged struggle for existence against grass and sheep." If the State retains possession of Penikese and establishes a bird sanctuary there, the continued history of the development and succession of plants and animals cannot fail to be of interest and importance. Surveys at stated intervals will give precise information

about natural succession under the prevailing climatic and edaphic conditions, and will furnish data on the means of dispersal of species in this region.

ECOLOGY OF PENIKESE.[1]

The ecological survey of the island is here divided into three parts: beaches, grassland, and ponds.

Beaches. The island is entirely surrounded by a beach of varying width and character. There is a plantless zone between the marine flora consisting almost entirely of algae, and the true beach flora of seed plants. This plantless zone is determined by the tides, being an area covered by water daily.

The zone of beach plants is the area between high daily tide and the limit of storm tide. On Penikese this is indicated by piles of eel grass often amounting to a foot or two in thickness on sheltered beaches. On this eel grass and on sheltered beaches generally grows a group of plants which are able to endure the severe conditions. The following plants appear in this group:

Ambrosia artemisiifolia
Chenopodium album
Cakile edentula
Rumex crispus
Ammophila breviligulata (on mud flats)
Lathyrus maritimus
Ammodenia peploides
Sonchus oleraceus
Datura Stramonium

These plants are found only on the beaches formed of fine sand in sheltered positions (plate 146, upper and middle views). A second type of beach is found on the exposed portions of the island on the north and west shores. Here the fine part of the glacial till of which the island is made has been washed away, leaving rounded stones of varying sizes from huge boulders to small pebbles. This type of beach supports practically no vegetation.

The tension line between the beach plants and the inland forms extends all around the island. It is best shown on the neck where the zone of the south shore merges with that of the north shore to form a band the width of the neck. The dominant plant in this zone is *Achillea Millefolium*, which with its associates shows a considerable dwarfing on this exposed pebbly neck. Along with the Achillea occur also:

[1] By Margaret F. Shaw.

Ambrosia artemisiifolia
Stellaria graminea
Spergularia marina
Rumex Acetosella
Oenothera biennis
Lepidium virginicum
Plantago major
Plantago lanceolata
Anagallis arvensis

GRASSLAND. One of the most striking plant associations is that dominated by Ammophila. This occupies the slopes on the west shores of both the main island and Tub Point, where it begins at the Achillea zone and ends sharply at the crest of the hill. In places it forms lobes stretching up the depressions. Few other plants are found with the Ammophila, which is two to three feet high. These are:

Plantago lanceolata
Achillea Millefolium
Aster vimineus
Polygonum Convolvulus
Solidago sempervirens

The inland grassland extends over the main part of the island, and is dominated by various species of grasses. These are not usually mixed, but are found in more or less pure stands in intermingling patches of different sizes. The most abundant of the inland grasses are *Agrostis alba*, *Agropyron repens*, *Anthoxanthum odoratum*, *Festuca rubra*, and *Holcus lanatus*. Somewhat less common are *Dactylis glomerata*, *Danthonia spicata*, and *Festuca elatior*.

In places where the soil is of a poorer quality, *Rumex Acetosella* is found in solid mats so thick that it gives a red tone to the slopes. It seems likely that such patches mark the spots denuded of vegetation in previous years by the nesting terns mentioned below.

The vegetation of the grassland, like that of the rest of the island, has not advanced beyond the herbaceous stage in its ecological development. While a number of herbaceous plants are found with the grass, the only shrubs are a few plants of *Rhus typhina*, a few feet high, on the east slopes, a few specimens of *Sambucus canadensis* on the northern end of the island, one small plant of *Myrica carolinensis* south of the dock, and one or two seedlings of *Quercus rubra* between the reservoir and the eastern shore. The island has been overrun by sheep in the past, but these have not been present for more than ten years.

Among the more common plants of the grassland area are:

Agropyron repens
Agrostis capillaris
Anthoxanthum odoratum
Festuca rubra
Rubus procumbens
Stellaria graminea
Hypericum perforatum
Lepidium virginicum

Festuca elatior
Holcus lanatus
Dactylis glomerata
Danthonia spicata
Poa pratensis
Phleum pratense
Rumex Acetosella
Achillea Millefolium
Daucus Carota
Solidago sempervirens
Solidago rugosa
Verbascum Thapsus
Potentilla argentea
Oenothera biennis
Oxalis stricta
Lychnis alba
Chrysanthemum Leucanthemum
Aster undulatus
Trifolium arvense
Trifolium pratense
Trifolium agrarium
Trifolium repens
Sonchus arvensis
Asparagus officinalis
Rudbeckia hirta
Cirsium arvense
Cirsium lanceolatum
Dennstaedtia punctilobula
Linaria canadensis

One interesting retrogression in the development of the vegetation is due to the nesting habits of the terns. These occupy the bare ground so thickly that large areas are denuded of vegetation (plate 147, upper view). When these nesting areas are abandoned the first results are similar to those of the abandonment of cultivated land, running at once to weed forms such as:

Solanum nigrum
Lepidium virginicum
Chenopodium album
Amaranthus retroflexus
Anagallis arvensis
Erigeron canadensis
Sonchus arvensis
Capsella Bursa-pastoris

Ponds. The ponds are of two types, first, low ponds quite near the shore, tending to be brackish, second, higher ponds formed in kettle-holes. The low ponds show nearly the same development. A center of open water containing a scum of floating algae is surrounded by a zone of sedge, a zone of *Spartina patens*, and an irregular zone of *Iris versicolor* marking the line of tension between the pond vegetation and the grassland. The filled marsh on the east of the island near the neck shows the further development of the marsh stage. Here a larger number of plants are found, of which the commonest are:

Rumex crispus
Convolvulus sepium
Scutellaria epilobiifolia
Lycopus uniflorus
Polygonum Convolvulus

The kettle-hole type of pond is entirely freshwater in character. Typha Pond, on the east side of the island between the residence and the neck, is in a deep depression, and has a Typha zone surrounded by a band of Juncus, outside which comes the Scirpus zone. The marsh stage here is well developed, containing:

Typha latifolia
Juncus acuminatus
Scirpus paludosus
Galium trifidum
Lycopus uniflorus
Scutellaria epilobiifolia

There are willows at both ends of this pond, indicating a natural shrub stage, provided they were not planted (plate 146, lowest view).

The ponds on the northwestern part of the island are very shallow, and show a rank growth of *Bidens connata*. The most northerly pond ("Dry Pond") had contained water in the spring, as its surface was cracked mud with no seed plants (plate 147, lower view). The south pond of this group ("Tern Pond") contains water buttercup, a remnant of rushes, the Spartina zone, and a marsh zone with *Aspidium Thelypteris*.

As the early records of the island mention trees belonging to forests of an advanced type, it is possible that such a forest may again develop, provided the island is neither pastured nor cultivated. There are three possible ways, aside from human agency, for seeds to reach the island, by means of birds, wind, or water. As the only birds which live on the island are sea birds that eat fish, and small birds of the sparrow type, with occasional crow or blackbird visitants, the probable means of seed introduction by birds occurs only in time of migration. The vegetation today indicates that it is isolated, as a common form like poison ivy is not found on the island, while it is one of the conspicuous features of the vegetation of neighboring islands and mainland. In 1873 this species was recorded from Gull Island, but it has disappeared completely.

GULL ISLAND.

Gull Island, which was included in Jordan's original survey, is much smaller than Penikese, and lies nearly half a mile to the southeast. The island is in two parts, the larger reaching an elevation of ten feet with the vegetation mostly in the upper central zone. The smaller portion, or bar, is bare of vegetation; it is connected with the main island at dead low water by a narrow neck.

On the northwest end of the crest there is a grassy district with a tall growth of Solidago, Achillea, Rumex, and Convolvulus. This area is extended toward the center by Ambrosia, Cakile, and Atriplex. A patch of Lathyrus lies on the eastern side. The southeast end of the crest is covered with especially luxuriant Ambrosia, with some Atriplex and a little grass. On the eastern side of the shore an arm of marshy land extends some distance, and is covered with *Spartina alterniflora*.

The small size, the low elevation, and the free exposure render it likely that the vegetation of Gull Island is now in its permanent form, and not likely to tend toward the forest type which in time, without interference by man, will probably dominate Penikese.

CHANGES IN THE FLORA.

Considerable changes in the flora have taken place since 1873. In that year Jordan listed 114 species of ferns and seed plants, of which 44 were not found in the present survey. It is not possible to be sure of the exact number, since the more detailed knowledge of the present day has given a more precise definition of species, and it is likely that in a few cases the same plant has been called by one name in Jordan's list and by another in the present paper. Although synonymy has been taken into account, the possibility still remains, for example, that Jordan's *Cerastium viscosum* is our *C. vulgatum*, *Archangelica Gmelini* may be *Ligusticum scothicum*, *Lycopus europaeus*, *L. americanus; Polygonum Hydropiper, P. acre; Atriplex patula, A. hastata; Festuca ovina, F. rubra.* Making all possible allowances for such corrections, it still remains obvious that many, perhaps two score, species present on the island fifty years ago have disappeared, victims perhaps of the grazing that continued for many years.

On the other hand, the present list contains 166 species, no less than 94 being new to the Penikese flora. The presence of such a large number and proportion (57%) of invaders indicates that ecologically the island is progressing rapidly, since it has not been free of sheep for more than a dozen years. The record of its further changes should be followed carefully by the botanists of this region as giving a clear picture, very definitely outlined, of vegetational succession in a circumscribed area.

The largest group of introduced species (30) have seeds which are without special adaptation for dispersal. These, most of which would be classed as weeds, were probably introduced accidentally along with garden seeds or in hay or otherwise. Many of them are found in the neighborhood of the hospital garden. Another considerable block (20 species) has been introduced directly by man, and many of these seem in a fair way to become thoroughly established. Of the remaining species, fifteen have wind-borne seeds, thirteen are found in or near ponds and may have been brought in among mud on the feet of birds, eleven have berries or fruits which are adapted to dispersal by seed-eating birds, two are beach plants which may have

been brought by currents, two are adapted to dispersal by animals, and one (Quercus) does not belong in any of these categories.

It seems likely that man is the most efficient agent for the introduction of new species, birds second, and wind third, while other agencies are relatively unimportant.

MARINE ALGAE.

As might be expected, the marine algae of Penikese differ with differing location and exposure. On the rocky northwest shore, where deep water comes close to the land, the dominant species are the larger tougher Phaeophyceae, such as Ascophyllum, Fucus, Laminaria, Chordaria, and Dictyosiphon, with some Ectocarpus and Elachistea. The only common green alga is Cladophora, while the Florideae are represented especially by Cystoclonium and Corallina. Noticeably absent are the Polysiphonias, Ceramiums, Mesogloia, and other feathery species which are very abundant in the region generally.

In the bay on the southwest shore there is distinctly less of the rockweeds, while *Polysiphonia fastigiata* is abundant, with much small Leathesia. Dictyosiphon is also common here, as are Ralfsia and Corallina.

The southern end of Tub Point was explored carefully as being representative of the type of shore seen all around the island except to the eastward. The rocky shore runs out southward to several large boulders exposed at low water. Here are Fucus and Ascophyllum in abundance, with Calothrix forming a dense turf on them, and much Cladophora on the boulders. On the rocks nearer the shore Ralfsia, Hildenbrandtia, Lithothamnion, and Protoderma are common. On the Fucus are found Chondria, Polysiphonia, Ceramium, Leathesia, and Elachistea. A little deeper occur Mesogloia, Chordaria, and Dictyosiphon. At a depth of three feet or so are found Chorda, *Laminaria Agardhii* and *L. digitata,* Scytosiphon, Punctaria, and Corallina. In the deeper water, from four to six feet, the common forms are Phyllophora, Chondrus, Ahnfeltia, and *Laminaria Platymeris.*

The eastern side of the island is fringed with eel grass, with fairly shoal water extending out some distance. Here the algal flora is relatively sparse, and quite different from that characteristic of the more exposed and rocky shores. The representative forms here are

Ulva, Enteromorpha, Cladophora, Rhizoclonium, *Anabaena torulosa*, *Oscillatoria margaritifera*, Porphyra, and Ectocarpus.

On Gull Island the northwest and west sides are comparatively bare of algae. Toward the northeast end large rocks are scattered as far out as one large boulder. The flora here is largely composed of rockweed, with Elachistea and Sphacelaria on the Fucus and *Polysiphonia fastigiata* on the Ascophyllum. Much Punctaria is present, bearing *Isactis plana* and *Calothrix fuscoviolacea*, with *Polysiphonia nigrescens* and Mesogloia also common. On the eel grass is an abundance of *Melobesia LeJolisii* and *Rhododermis Georgii*. On the large boulder is a fine growth of *Prasiola stipitata*, and in a little pool on the top much *Platymonas subcordiformis*.

On the east side rocks extend out beyond a patch of Spartina on the shore, and here, in addition to the species noted above, luxuriant *Polysiphonia urceolata formosa*, Dictyosiphon, and Punctaria are found.

On the bar at the southeast end of Gull Island few algae are to be seen on the east side, where the bottom is covered with cobbles, with a few tufts of rockweed on the larger stones. On the west side, however, algae are abundant. The rockweeds bear Elachistea, Dictyosiphon, and Mesogloia abundantly. In the deeper water, especially toward the northwest end, Melobesia is common on the eel grass, and much Chorda is also found. Covering much of the bottom is a heavy growth of *Anabaena torulosa* and *Oscillatoria margaritifera*. The smaller algae, besides being fouled with these species, are covered here and there with *Calothrix confervicola*.

A comparison of the marine algae found with those listed by Jordan shows that there has been a considerable change in the marine flora since 1873. Excluding species not now recognized by systematists, Jordan listed 25 species which were not found in the course of the survey. Of these 8 belonged to the Chlorophyceae, 2 to the Phaeophyceae, and 15 to the Rhodophyceae. On the other hand the collections of 1923 show 43 species and 9 varieties not represented on Jordan's list, of which 11 belong to the Myxophyceae, 9 to the Chlorophyceae, 13 to the Phaeophyceae, and 19 to the Rhodophyceae. Of these, in addition to the Myxophyceae, which are very poorly represented in Jordan's list, 9 species are either very small or parasitic and likely to have been overlooked by Jordan at a time when knowledge of such forms, at least in this country, was little advanced.

However, 14 species, now so abundant both at Penikese and in the surrounding waters as to be fairly considered as representative species of the present flora and by no means likely to be overlooked, were missing in 1873. These are:

Anabaena torulosa
Chaetomorpha Linum
Enteromorpha Linza
Chorda filum
Desmarestia aculeata
Ectocarpus confervoides
Ectocarpus fasciculatus
Punctaria latifolia
Ralfsia verrucosa
Scytosiphon lomentarius
Chondria Baileyana
Nemalion multifidum
Phyllophora membranifolia
Polysiphonia fibrillosa

On the other hand, Jordan lists some species which are now abundant in the general region, the absence of which at Penikese is surprising, though it is perhaps to be explained by the short time devoted to the survey. Such species as those included in the following list are certainly to be expected at Penikese, even though the rich list of Callithamnions and of the more delicate Polysiphonias given by Jordan is not likely to be duplicated at the present time.

Cladophora gracilis
Enteromorpha clathrata
Sargassum filipendula
Antithamnion americanum
Callithamnion Baileyi
Dasya elegans
Griffithsia globifera
Polysiphonia variegata

DIATOMS.[1]

The island of Penikese has been inaccessible until recently because of its use as a State leper colony, and this, together with its somewhat isolated location, lends rather more than usual interest to the flora found there. Its small size, isolated location, and the nature of its topography form a rather severe set of factors in limiting the diatom species found in this flora. The island has a number of small ponds, and those which are not low enough to be subject to occasional invasions by the waves and tides of the sea are replenished only by the frequent rains which fall in that region, and hence are subject to occasional drying-up in periods of extended drought. From the former are excluded such diatoms as are not brackish in habitat or else not hardy enough to stand changes in the salinity of the water. Occasional drying-up of the other ponds may be somewhat of a factor in their diatom life, although the humidity of the atmosphere and the brevity of such dry periods probably allows the diatom life to go on

[1] By Paul S. Conger, Carnegie Institution of Washington.

without serious interruption. The isolation of the island, lack of inflowing streams, etc., very greatly limit the chance of importation of new diatom species to these ponds.

The map shows the locations where diatom samples were secured. All of the ponds are very small and shallow. The samples were dredged at a depth of about one foot, except in the cases of the marsh and Dry Pond, both of which had dried to a condition of cracked mud, and here some of the surface was collected. The diatom flora of any of the ponds is, as intimated, rather meager, and in several of them the conditions seem to have been favorable to the rapid multiplication and growth of a certain single species. In Typha Pond *Navicula elegans* W. S. is very abundant, in Tub Ponds *Navicula peregrina* E., and in South Pond *Navicula formosa* Greg. is dominant. The finding of a mixture of distinctly fresh- and salt-water forms in several of the ponds is probably not difficult to understand. Dr. H. W. Henshaw has suggested that the isolation of the island and the small amount of fresh water on it places the latter at a high premium with the terns and other aquatic birds which make their home and nest there by the thousands. Hence it is easy to see how marine diatoms would be carried by them to the fresh-water ponds where they must necessarily go daily by thousands to drink. Overflow by the sea in times of high tide or high winds would also help to explain the presence of marine diatoms in those ponds of lower elevation and in the marsh.

Two species of Navicula have proved indeterminate thus far, and the following fresh-water form is new.

Navicula nanella P. C. sp. n. Valve elliptical with broad obtuse ends and straight taper from the center to the ends. Lunate thickening across extreme ends of valve from the terminal nodule to the margin. Central area broadened laterally. Arrangement of costae giving appearance of a double dark band across the valve near center when dry. Raphe straight, slightly swelling at the center. Costae widely spaced, heavy, smooth, and reaching nearly to the raphe, radiate from the center half way to the end of the valve, and convergent from thence on to the end. Length 0.023 mm. Width 0.008 mm. Striae 8½ in 0.01 mm.

Fresh water.

This species presents some likeness to *Navicula hungarica* Grun. (1860), see Cleve, Nav. Diat. II, p. 16, but if so, Cleve's interpretation of the strongly marked costae on either side of the terminal nodule must refer rather to an internal thickening of the valve at this point,

as shown by a careful study of the girdle view. Also Cleve's figures show a strong central dilation not present in this species. He also implies that the costae are striate which is certainly not the case here.

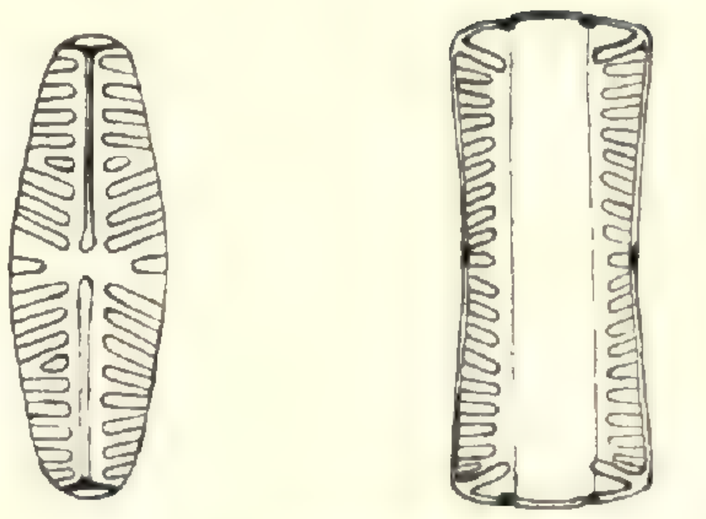


Fig. 1. Navicula nanella P. C. sp. n. × 1000

The identifications of the Penikese diatom species were verified by Dr. Albert Mann, Diatomist of the Carnegie Institution of Washington. Following is a list of the species, separate for each pond or sample, and a complete list of all the species from the island.

PENIKESE ISLAND HARBOR—PLANKTON DIATOMS.

Achnanthes longipes Ag.
Actinocyclus Ehrenbergii Ralfs
Actinoptychus undulatus E.
Chaetoceros coarctatum Laud.
Chaetoceros decipiens Cl.
Chaetoceros didymum E.
Chaetoceros (Bacteriastrum) varians Laud. forma furcata Grun.; Disc. 0.028 mm. diam.
Cocconeis scutellum E.
Coscinodiscus excentricus E.
Fragillaria hyalina K.
Grammatophora marina K.
Licmophora flabellata Ag.
Licmophora Lyngbyei K.
Licmophora tincta (Ag.) Grun.
Mastogloia exigua Lewis
Melosira Borreri Grev.
Melosira sulcata K.
Nitzschia closterium (E.) W. S.
Nitzschia longissima (Bréb.) Ralfs
Nitzschia Sigma W. S.
Pleurosigma elongatum W. S.
Rhabdonema Adriaticum K.
Rhizosolenia hebetata var. semispina (Hensen) Gran.
Rhizosolenia setigera Brightw.
Striatella unipunctata Ag.
Synedra Hennedeyana Greg.
Tropidoneis Lepidoptera (Greg.) Cl.

PENIKESE ISLAND HARBOR—BOTTOM DIATOMS.

Dredging-depth 2 feet, near shore.

Achnanthes longipes Ag.
Actinocyclus crassus W. S.
Actinoptychus undulatus E.
Amphora Grevilleana Greg.
Amphora obtusa Greg.
Auliscus caelatus var. strigillata A. S.
Biddulphia Favus (E.) V. H.
Campylodiscus Thuretii Bréb.
Cocconeis scutellum E.
Coscinodiscus excentricus E.
Coscinodiscus Oculus-Iridis var. Morsiana Grun.
Eupodiscus Argus E. (=Aulacodiscus Argus (E.) A. S.).
Grammatophora macilenta W. S.
Grammatophora marina Grun.
Grammatophora serpentina E.
Hantzschia marina (Donk.) Grun.
Hyalodiscus stelliger Bail.
Melosira sulcata K.
Navicula aspera E.
Navicula Bombus E.
Navicula clavata var. caribaea Cl.
Navicula didyma K. & E.
Navicula distans (W. S.) Cl.
Navicula exempta W. S.
Navicula forcipata var. densistriata A. S.

Penikese Island Harbor—Bottom Diatoms.—(*Continued.*)

Navicula fusca Greg.
Navicula Hennedeyi W. S.
Navicula humerosa Bréb.
Navicula interrupta K.
Navicula Lyra E.
Navicula Lyra var. dilatata A. S.
Navicula Lyra var. elliptica A. S.—Sch. At. 3:11.
Navicula Lyra var. elliptica A. S.—Sch. At. 2:29.
Navicula maxima Greg.
Navicula notabilis var. expleta A. S.
Navicula palpebralis var. angulosa Greg.
Navicula quadratarea A. S.
Navicula Smithii Bréb.
Navicula suborbicularis Greg.
Navicula Yarrensis Grun.
Nitzschia longissima (Bréb.) Ralfs
Nitzschia Sigma W. S.
Pleurosigma aestuarii W. S.
Pleurosigma affine Grun.
Pleurosigma elongatum W. S.
Podocystis Americana Bail. (=Podocystis Adriatica K.).
Rhabdonema Adriaticum K.
Scoliopleura latestriata (Bréb.) Cl.
Surirella recedens A. S.
Synedra Gaillonii var. macilenta Grun.
Trigonium alternans (E.) Cl.

Tern Pond.

Cyclotella comta (E.) K.
Navicula Brauni Grun.
Navicula dicephala (E.) W. S.
Navicula major K.
Navicula viridis Nitzsch
Pseudo-eunotia doliolus (Wall.) Grun.

Dry Pond.

Grammatophora marina K.
Hantzschia amphioxys Grun.
Navicula borealis E.
Navicula Brauni K.
Navicula dicephala (E.) W. S.
Navicula major Grun.
Navicula peregrina E.
Navicula viridis Nitzsch
Nitzschia fonticola Grun.

Marsh.

Actinoptychus undulatus E.
Auliscus caelatus Bail.
Biddulphia favus (E.) V. H.
Hyalodiscus stelliger Bail.
Melosira sulcata forma coronata Grun.
Navicula elegans W. S.
Navicula major K.
Navicula peregrina E.
Nitzschia scalaris W. S. (Wide variety).

Typha Pond.

Cyclotella comta (E.) K.
Hyalodiscus stelliger Bail.
Navicula ambigua Cl.
Navicula borealis E.
Navicula dicephala (E.) W. S.
Navicula elegans W. S.
Navicula (Stauroneis) gracilis E.
Navicula Hantzschiana Rab.
Navicula major K.
Navicula nanella P. C. sp. n.
Navicula rhynchocephala K.
Navicula viridula K.
Nitzschia frustulum var. perminuta Grun.
Surirella Mölleriana Grun.
Tabellaria fenestrata (Lyngb.) K.

TUB POND.

Coscinodiscus excentricus E.
Coscinodiscus nodulifer A. S.
Coscinodiscus radiatus E.
Hyalodiscus stelliger Bail.
Navicula peregrina E.
Tropidoneis Lepidoptera (Greg.) Cl.

SOUTH POND.

Coscinodiscus excentricus E.
Eupodiscus Argus E. (=Aulacodiscus Argus (E.) A. S.).
Grammatophora macilenta W. S.
Hyalodiscus stelliger Bail.
Melosira sulcata K.
Navicula formosa Greg. (Dominant form here).
Navicula (Stauroneis) Gregorii Ralfs
Navicula peregrina E.
Rhabdonema Adriaticum K.
Tropidoneis Lepidoptera (Greg.) Cl.

(To be continued.)

A NEW SPECIES OF RHIZOPOGON FROM NEW HAMPSHIRE.

DAVID H. LINDER.

(Plate 148.)

THE genus *Rhizopogon*, a member of the *Hymenogastraceae*, belongs among the higher *Basidiomycetes*, and is a group of puffball-like subterranean fungi. It differs from the puffballs in that the gleba does not break down and leave a cavity filled with spores and capillitium, but retains the septa that divide the persisting gleba into small cavities which at maturity are filled with spores and have no capillitium.

It was the writer's good fortune while spending the summer at Camp Algonquin in Holderness, New Hampshire, to find there in moist woods consisting chiefly of white birch,—*Betula alba* var. *papyrifera* (Marsh.) Spach,—but with here and there a group of hemlock trees, a fungus resembling *Rhizopogon occidentalis Z.* & D.[1] It was on an old, almost decayed stump in one of these groups of hemlock trees that this hypogeous fungus was found where it had been dug from near the base of the stump, presumably by a chipmunk which had carried it up to eat at leisure, and there had left it on being frightened by passers-by.

The fungus when fresh was bright lemon-yellow, subglobose, and slightly lobed, measuring somewhat over three centimeters in diam-

[1] Zeller, S. M., & Dodge, C. W.— 'Rhizopogon in North America." Ann. Mo. Bot Gard. **5**: 1–36. 3 pls. 1918.

eter. The fibrils at that time were inconspicuous. While drying, the plant emitted a faint odor, resembling that of the Phalloids.

Now that the specimen is dry, the peridium is chamois to honey yellow[2] in color and the fibrils have become conspicuous as mummy brown filaments adhering to the peridium and ascending from the base to near the summit. The peridium is composed of more or less loosely interwoven hyphae and is 120 μ thick; the gleba is cinnamon buff and broken up into irregular rounded cavities; septa narrow, 16–27 μ broad, compact; basidia inconspicuous, borne at an acute angle to the septa, hyaline, 13–15 × 7 μ; sterigmata 3–4.5 μ long; spores acrogenous, cream colored, broadly ellipsoidal, with truncate base, 6.8–7.2 × 3–4.5 μ, smooth.

This species, while externally resembling very closely *R. occidentalis* Z. & D., differs in many respects. It has a thinner peridium, made up of more loosely and irregularly interwoven hyphae, and has not the dense and more deeply colored surface layer; the septa are narrower and have not the specialized and deeply staining hyphae found in *R. occidentalis;* the basidia are broader, more inconspicuous, and are borne at an acute angle to the septa, while those of *R. occidentalis* are perpendicular to the septa; the spores are broader, in proportion to their length, than in the previously mentioned species and have a truncate base. For these reasons, the New Hampshire fungus is made a new species, as follows:

Rhizopogon truncatus sp. nov.—Fructificationes subglobosae et irregulares, diametro 3 cm. metientes, citrinae recens lectae, odor languidus, *Phallo duplicato* similis siccus, "chamois" vel "honey yellow" (Ridgway); funiculi applicati, "mummy brown" (Ridgway) siccati; peridium tenue, 120 μ crassitudine, simplex, byssoideum, hyphis tenuibus contextum, "maize yellow" (Ridgway); gleba siccata "cinnamon buff" (Ridgway); locelli globosi aut irregulares vacui; septa 16–27 μ crassitudine, hyphis hyalinis contexta; basidia late clavata, 13–15 × 7 μ, hyalina, sterigmatibus longis, 3–4.5 μ; sporae truncatae, late ellipsoidae, cremeae, 6.8–7.2 × 3–4.4 μ, leves.

Habitat sub foliis. New Hampshire. Aestate.

Type in Farlow Herbarium.

The writer wishes to acknowledge his indebtedness to Dr. C. W. Dodge whose collection was placed at his disposal for purposes of comparison.

Harvard University.

[2] Ridgway, R.—Color Standards and Nomenclature. Washington, D. C., 1912, used throughout for comparison.

Explanation of Plate 148.

All drawings of this plate were made by the aid of a camera lucida Scale = 10 μ in each case. The magnifications given below are merely approximate.

Fig. 1. Low power drawing to show the nature of the peridium of *Rhizopogon occidentalis*. The compact and more deeply colored outer layer at the left and the crowded intertwining, almost parallel middle region contrast strongly with the loosely interwoven hyphae of the peridium of *R. truncatus*. Mounted in 10% glycerine. × 273.

Fig. 2. A group of spores of *R. occidentalis* showing their narrow elliptical form. Mounted in eosine-glycerine. × 1125.

Fig. 3. Spores of *R. truncatus* drawn to the same scale as Fig. 2 to illustrate the ovoid-elliptical, truncate shape, and the dark deeply staining basal region. Mounted in eosine-glycerine. × 1125.

Fig. 4. A typical basidium of *R. occidentalis* with its short sterigmata. In eosine-glycerine. × 825.

Figs. 5–6. Typical basidia of *R. truncatus* with their stouter and more elongate sterigmata. Drawn from material crushed in 10% eosine and glycerine. × 825.

Fig. 7. Low power drawing of the peridium of *R. truncatus*. Note the irregular outline of the peridium,—on the left,—and the loose tangled hyphae of which it is composed. Bundles of hyphae may be seen running at right angle to the plane of the section. Mounted in 10% glycerine. × 273.

LEPIDIUM LATIFOLIUM IN NEW ENGLAND.

Albert P. Morse.

In late July of this year Mr. R. B. Mackintosh of Danvers brought in for the Peabody Museum flower-table specimens of a cruciferous plant whose bushy habit of growth, with tough, branching stems and spreading corymbose, fine white inflorescence, was suggestive of that of our common *Ceanothus americanus*. The immature fruit pointed to *Lepidium* or its proximity. Search in our local Essex County herbarium and in the New England collection at the Boston Society of Natural History failed to disclose the plant; nor was it to be found in that of the New England Botanical Club at Cambridge. Through the kind efforts of Dr. N. C. Hirschy of Berea College, who was at the Gray Herbarium at the time, it was satisfactorily identified as the Old World *Lepidium latifolium* L.

This is a widely distributed species, being found in many parts of Europe except in high altitudes and latitudes, in North Africa, and in southwestern Asia as far east as Turkestan and Thibet. It is also common in Mexico, probably having been introduced from Europe.

It is a perennial, with strong rootstocks, tough, somewhat woody, branching stems two to five feet high, succulent foliage with a sharp, "horse-radish" taste and odor, and was at one time used in medicine. The petioles of the basal leaves are very long, being sometimes as much as nine inches in length. It is of vigorous growth and seems thoroughly established at Peabody, Massachusetts, at and in the near vicinity of the American Glue Company's works,—in the yard, along the railroad tracks and embankments, and in moist ground nearby. It is believed from this distribution that it was accidentally introduced with glue-stock (probably bones, the seeds adhering to scraps of tissue or the burlap containers) from abroad, and that it has been here for several years, but in its present station only since 1909 or 1910, when a spur track was built.

Of vigorous constitution, a heavy bearer of seed, perennial, sometimes sending up additional flowering branches from the base late in the season, the plant seems liable to become a hardy weed of undesirable character.

Peabody Museum, Salem, Massachusetts.

Myriophyllum magdalenense; A Correction.—Having occasion to look up the publication of the endemic *Myriophyllum* of the Magdalen Islands I am chagrined to find that, with the aid of a copyist and in the pressure of details at the close of a college year, the species got published as *Myriophyllum magdalense*. The type-material and duplicates of the collection were properly labeled and even at this late date it seems desirable to correct the orthographic error so that the name of the species shall have the proper form and shall agree with the labels of the specimens. As corrected the name is

Myriophyllum **magdalenense**, nom. emend. *M. magdalense* Fernald, Rhodora, xxi. 122 (1919), misspelled through orthographic error.—M. L. Fernald, Gray Herbarium.

Edward Lothrop Rand, a member of the Rhodora Board since its formation in 1898, died at his home in Cambridge, Massachusetts, October 9, 1924. Mr. Rand was born in Dedham, Massachusetts, August 22, 1859, the son of Edward S. and Jennie A. (Lathrop) Rand. He was graduated from Harvard College in 1881 and from the Harvard

Law School in 1884. From this time and until incapacitated by serious illness in 1921 he practised law in Boston. A close observer, with keen interest in nature, he early took up botany as an avocation. In collaboration with the late John Howard Redfield of the Philadelphia Academy of Natural Sciences he prepared a Flora of Mount Desert Island, published in 1894, a work of unusual merit among American local floras of its period. He was one of the founders of the New England Botanical Club and was by annual election its Corresponding Secretary from 1895 to 1921, performing the duties of the position with conscientious care and great loyalty to the society. His herbarium, chiefly of his own collection and representing the flora of Mount Desert in much detail, was given by him to the New England Botanical Club in 1914. It is hoped that a more extended notice of his life and botanical activities may be published in this journal.

Holosteum umbellatum in Connecticut.—*Holosteum umbellatum* L. was listed by Miss Emily J. Leonard in her "Catalogue of the Phaenogamous and Vascular Cryptogamous Plants found growing in Meriden, Connecticut" published in 1885, but was excluded in the later "Catalogue of the Flowering Plants and Ferns of Connecticut" issued in 1910, as no authentic specimens were to be found.

In Gray's Manual the range of this introduced plant is given as "roadsides, fields, etc. New Jersey, Pennsylvania, and Georgia."

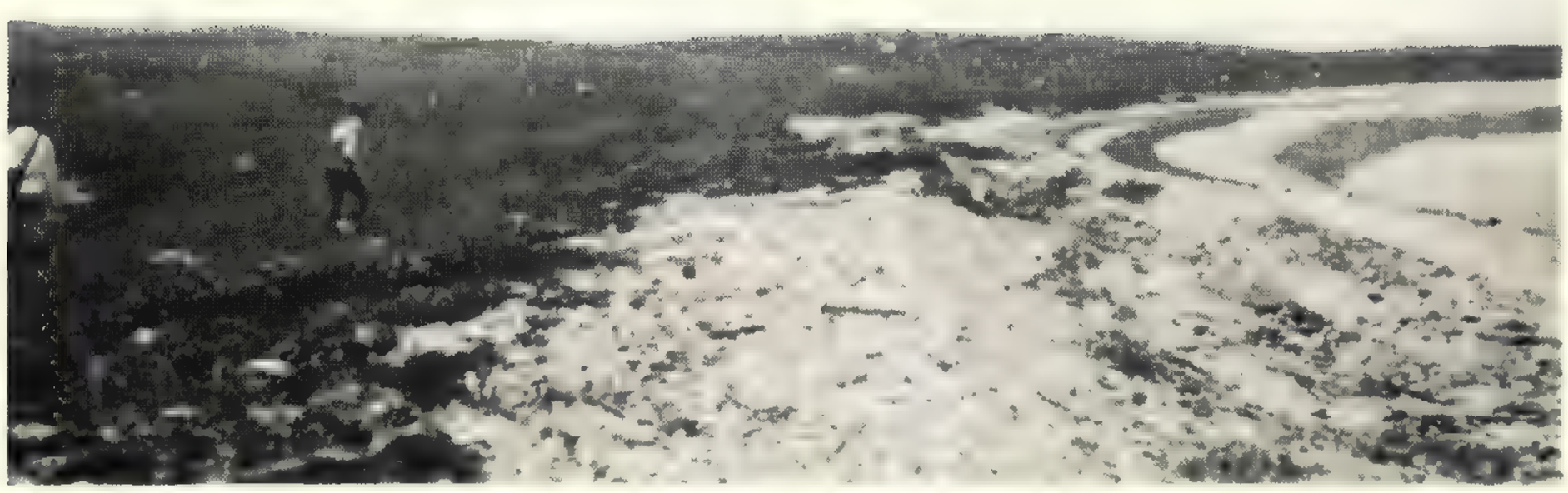
On visiting the Hiti Nurseries at Pomfret, Connecticut on May 30, 1924, I found that there were three annual weeds abundant all through the nursery, one of them being the Jagged Chickweed, *Holosteum umbellatum*, the others *Draba verna* and *Sisymbrium Thalium*.—Francis Welles Hunnewell, Wellesley, Mass.

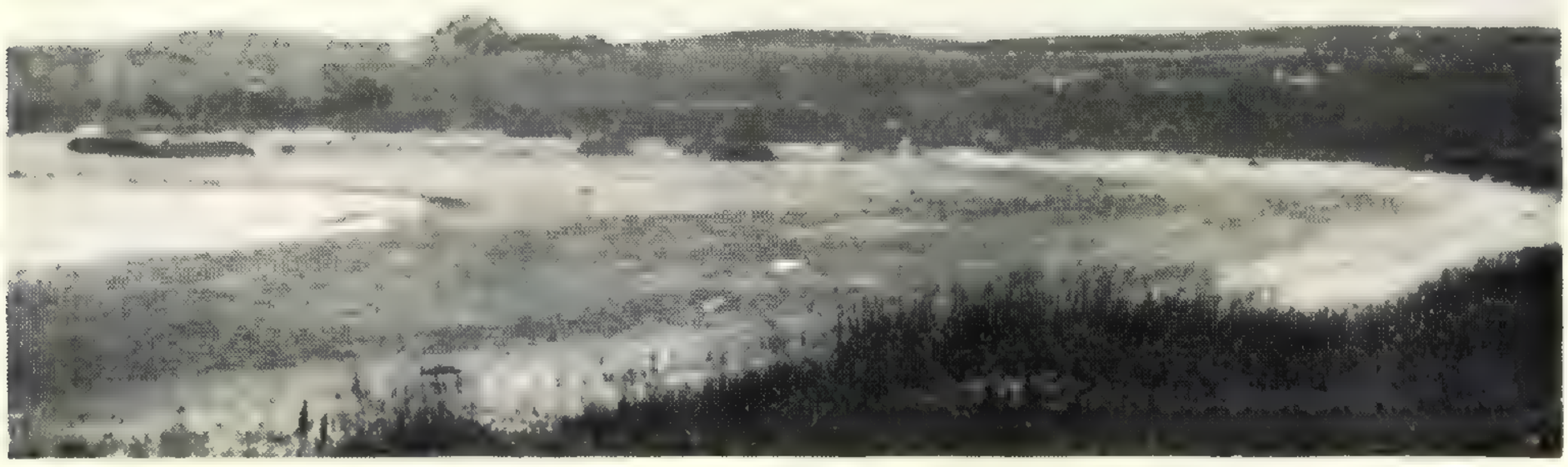
On Citing Richardson's Botanical Appendix to Franklin's First Journey.—In checking the date of publication of the original description of *Crepis nana* Richards., I found that the Index Kewensis cites Franklin's Journey, App. ed. 2, p. 92, while W. J. Hooker (Fl. Bor.-Am. **1**: 297) cites *ibid.* p. 29, and the reprint of Richardson's Bot. App. to Franklin's 1st Journey in the Library of Gray Herbarium gives *Crepis nana* on p. 18. The explanation of this confusion is found, first, in the fact that, within a year from the first printing, Richardson

expanded his botanical appendix, adding 15 pages and 24 numbers to his list and revising his descriptions; second, that the Gray Herbarium reprint is from the first edition; and, third, that there is a typographical error in the Index Kewensis citation, which should read p. 29.

Most authors have probably followed Hooker in citing Richardson, but some libraries have the reprint from the first edition and others from the second while still others have only one or other of the complete volumes of Franklin's Narrative, with the original paging in the appendix. It would be advisable, therefore, in citing publication of *those species listed in edition 1 of Franklin's 1st Journey* to cite both editions with original page numbers and to include both reprint page numbers also. For example, *Crepis nana* Richards. Frankl. Journ. App. ed. 1 (1823) p. 746 (18 in rep.); ed. 2 (1823) p. 757 (29 in rep.).—E. B. Babcock.

Vol. 26, no. 309, including pages 169 to 180, was issued 30 September, 1924.



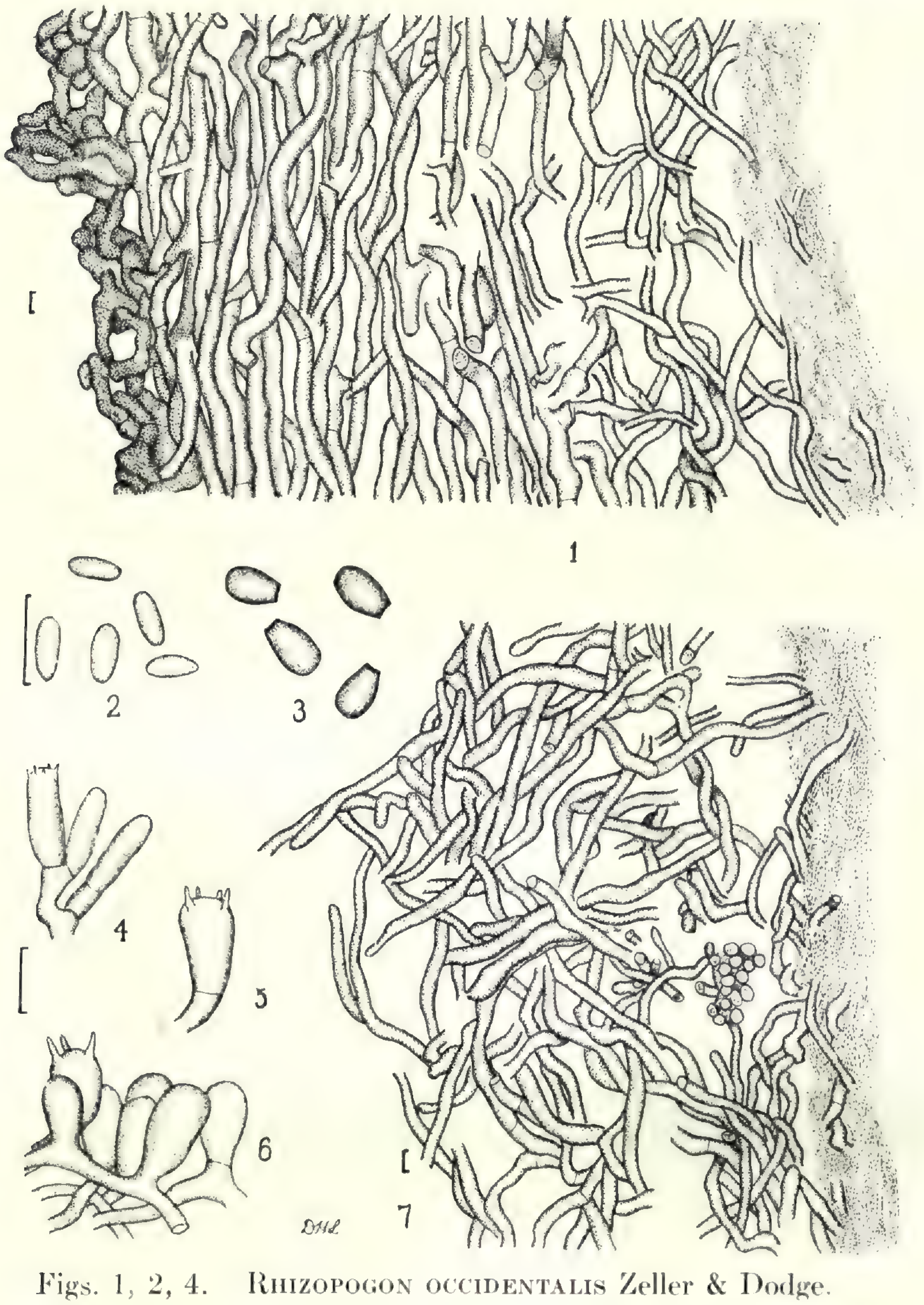


FLORA OF PENIKESE.

UPPER VIEW: Up the Neck, showing strand. MIDDLE VIEW: Same, over tidal flat. LOWER VIEW: Typha Pond, looking southwest.

FLORA OF PENIKESE.

UPPER VIEW: Looking southeast across area denuded by terns.
LOWER VIEW: Dry Pond, looking north.



Figs. 1, 2, 4. Rhizopogon occidentalis Zeller & Dodge.
Figs. 3, 5–7. Rhizopogon truncatus Linder, spec. nov.

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Rhodora

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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 26. November, 1924. No. 311.

JUNCUS TRIGLUMIS AND ITS AMERICAN REPRESENTATIVE.

M. L. Fernald.

One of the most attractive of arctic-alpine *Junci* is the little plant described by Linnaeus as *Juncus triglumis*. In Eurasia it is characteristic of wet peaty or boggy spots in the arctic and alpine areas, and in America the name *J. triglumis* is familiar to students of the arctic flora and that of the Rocky Mountains south to New Mexico.

My first experiences with the American plant were with Professor Wiegand on the limestone barrens of southeastern Labrador and western Newfoundland in 1910, when the plant, which is quite like the specimens from the Rocky Mountains, was labeled, like them, *J. triglumis*. During the summer of 1924, with Messrs. Bayard Long and Boyd Dunbar, I again collected the Newfoundland plant on the limestone barrens bordering the Straits of Belle Isle. There the plant showed such variation in stature and coloring that it has received more than passing study; and the result of this study is a demonstration that the North American plant is a species distinct from that of Eurasia.

The Eurasian plant, *J. triglumis* L., has, as accurately described by Buchenau, the *bracts* of the inflorescence usually *obtuse* or the lower mucronate, and ordinarily *conspicuously* shorter than the flowers. In all the American material (including that from Greenland) seen the *lower bract* is *long-acuminate* or *long-awned* and *equal to or overtopping the lowest flower*. In *J. triglumis* the mature *capsule* is 6–7 *mm. long*, conspicuously *exserted* from the perianth, firm, castaneous and conic to rounded below the short beak. In the American plant the thinner and usually paler capsule is included or barely exserted, 3–4 *mm. long*, and rounded to subtruncate at summit. In *J. triglumis* the mature seeds

(including the long white tails) are 2.3–3 mm. long, in the American plant 1.3–2 mm. long.

Besides these fundamental characters which clearly mark the two plants as distinct species there are tendencies which, though not constant, are worth noting: especially the more delicate texture and paler coloring of the bracts and perianths of the American plant, and the weaker filaments of the latter. In *J. triglumis* mature fruiting specimens often have the filaments still firm and straight, the anthers distinctly protruding from the top of the perianth; but in fruiting specimens of the American plant the filaments become shriveled and bent and the anthers turned to one side. Our plant is clearly *J. triglumis*, var. *albescens* Lange, Consp. Fl. Groenl. 123 (1880). Lange's description was exactly to the point:

"Var. *β. albescens!* Caulibus gracilioribus minusque rigidis, glomerulo minore quam in forma typica, saepius bifloro, bracteis et perigonii foliis pallidis, capsula vix exserta."

Buchenau, however, both in his *Monographia Juncearum* and in his treatment in *Das Pflanzenreich*, has discounted Lange's variety as an unimportant form, saying: "Formae diversae.—Forma bracteis et tepalis pallidis est var. *albescens* Lange, Conspectus fl. Grönland (1880) 123.—Forma bracteis et tepalis nigricantibus: var. *α nigricans* Regel . . . bracteis et tepalis fuscescentibus: var. *β. fuscatus* Regel."[1] In other words, Buchenau looked upon Lange's plant merely as a trivial color-form and ignored Lange's precise description of the capsule. That the Greenland plant is the characteristic American species is clear from the four Greenland collections at hand, two in flower, two in fruit, and all with the long-acuminate lower bract.

The American species should be called

JUNCUS **albescens** (Lange), n. comb. *J. triglumis* var. *albescens* Lange, Conspect. Fl. Groenl. 123 (1880).

The following specimens have been examined. GREENLAND: Klaushavn, 1870, *Berggr* (collection cited by Lange); Disco, July 22, 1871, *T. M. Fries;* Christianshaab, July 26, 1884, *Warming & Holm;* Sermiliarsuk, August 4, 1889, *Hartz.* ARCTIC AMERICA: station unknown, 1829–33, *James Ross.* LABRADOR: Square Island, August 16, 1882, *J. A. Allen;* wet moss by springs and open wet spots on limestone tableland, Blanc Sablon, August 1 and 6, 1910, *Fernald & Wiegand*, nos. 3043, 3044. NEWFOUNDLAND: peaty margins of pools in limestone barrens, Sandy (or Poverty) Cove, August 1, 1924,

[1] Buchenau in Engler, Das Pflanzenr., iv. Heft 36: 224 (1906).

Fernald, Long & Dunbar, no. 26,496; peaty limestone barrens, Savage Cove, August 1, 1924, no. 26,495; wet places, Flower Cove, July 3, 1921, *Mary E. Priest;* wet peaty limestone barrens, Flower Cove, July 27–30, 1924, *Fernald, Long & Dunbar,* nos. 26,492–26,494; peaty and turfy pockets in limestone barrens, Brig Bay, August 6, 1924, *Fernald, Long & Dunbar,* no. 26,497; dried brook-bed, barrens at base of serpentine tableland, Bonne Bay, August 27, 1910, *Fernald & Wiegand,* no. 3047; wet runs and boggy spots in limestone barrens, Ingornachoix Bay, August 1, 1910, *Fernald & Wiegand,* no. 3045; in damp marl, Table Mountain, Port à Port Bay, August 16, 1910, *Fernald & Wiegand,* no. 3046, July 26, 1921, *Mackenzie & Griscom,* no. 10,195. QUEBEC: Koksoak River, Ungava, August 23, 1896, *A. P. Low,* no. 13,983; mossy turf, Longue Pointe, Brest, July 31, 1915, *H. St. John,* no. 90,303. KEEWATIN: Ranken Inlet, August 30, 1910, *J. M. Macoun,* no. 79,214; Fullerton, September 4, 1910, *J. M. Macoun,* no. 79,213. MANITOBA: Churchill, July 30, 1910, *J. M. Macoun,* no. 79,212. ALBERTA: Rocky Mountains, *Drummond;* south of Wilcox Pass, August 1, 1908, *S. Brown,* no. 1402; Pipestone Valley, July 7, 1906, *S. Brown,* no. 428; Lake Louise, *J. M. Macoun et al.* COLORADO: head of Clear Creek, 1861, *Parry,* no. 359; Twin Lakes, *Wolf & Rothrock,* no. 937; Seven Lakes, August 14, 1901, *Clements.* BRITISH COLUMBIA: Grizzly Creek, Prairie Hills, July 26, 1907, *Butters & Holway,* no. 236. ALASKA: wet banks, Coal Harbor, Unga Island, Shumigan Islands, July 15, 1872, *M. W. Harrington.*

In some characters *Juncus albescens* is as near *J. biglumis* L. as *J. triglumis.* In *J. biglumis,* however, the lower bract is erect and more elongate; the perianth blackish; the anthers much smaller than in *J. albescens;* the capsules retuse and with purple-margined valves; and the seeds about 1 mm. long and with much shorter tails than in *J. albescens.*

GRAY HERBARIUM.

SUPPLEMENTARY REPORT ON DESMIDS OF CONNECTICUT.

C. J. HYLANDER.

IN a previous report (see RHODORA **24:** 213–224, 236–241) I noted some 266 species and varieties of desmids from Connecticut. These were collected in 22 townships. Since the publication of that report, it has been possible to visit 58 additional townships, covering 3 new counties, and thus adding considerably to the number of desmid stations for the state. A complete list of the townships in which

there are now recorded desmid stations, includes every county in Connecticut. In detail, they are as follows:

Litchfield County: Bethlehem, Canaan, Cornwall, Kent, Litchfield, Morris, Plymouth, Salisbury, Thomaston, Warren, Washington, Watertown.

Hartford County: Bristol, Glastonbury, Plainville, New Britain, Southington, Suffield.

Tolland County: Andover, Bolton, Coventry, Ellington, Somers, Tolland, Union.

Windham County: Ashford, Brooklyn, Canterbury, Chaplin, Eastford, Killingly, Plainfield, Pomfret, Putnam, Sterling, Thompson, Windham, Woodstock.

Fairfield County: Greenwich, Monroe, Newtown.

New Haven County: Ansonia, Bethany, Branford, Cheshire, Derby, Guilford, Hamden, Madison, Middlebury, Meriden, Naugatuck, New Haven, North Branford, North Haven, Orange, Oxford, Seymour, Southbury, Wallingford, Waterbury, Woodbridge.

Middlesex County: Clinton, Essex, East Haddam, Haddam, Killingworth, Saybrook.

New London County: Bozrah, Griswold, Groton, Lebanon, Ledyard, Lisbon, Montville, North Stonington, Old Lyme, Preston, Salem, Voluntown.

In addition to recording new stations for desmids reported in the previous paper, this report includes 35 additional species, varieties and forms, for Connecticut. They are distributed among the different genera as follows: 12, Staurastrum; 8, Cosmarium; 3, Closterium; 3, Micrasterias; 3, Euastrum; 2, Penium; and one each of Sphaerozosma, Arthrodesmus, Cylindrocystis and Hyalotheca.

As in the previous report, an asterisk indicates that the plant is new to Connecticut; two asterisks, that it is new to North America; and a dagger, that it is known only from North America.

SPIROTAENIA Bréb.

S. condensata Bréb. Ledyard.

MESOTAENIUM Näg.

M. macrococcum (Kütz.) Roy & Biss. Salem.

CYLINDROCYSTIS Menegh.

*C. crassa DeBary. Haddam.

NETRIUM Näg.

N. DIGITUS (Ehrenb.) Itzigs. & Rothe. Derby, Griswold, Kent, Lebanon, Ledyard, Oxford, Plainfield, Salem, Somers, Wallingford, Woodstock.

N. DIGITUS var. CONSTRICTUM W. & G. S. West. Tolland.

PENIUM Bréb.

*P. CUCURBITINUM Biss. Salem.

*P. CRUCIFERUM (DeBary) Wittr. Salem.

P. MARGARITACEUM (Ehrenb.) Bréb. Salisbury, Tolland.

P. NAVICULA Bréb. Ashford, East Haddam, Griswold, Killingly, Voluntown, Woodbridge.

CLOSTERIUM Nitzsch.

C. ABRUPTUM West. Woodstock.

*C. ARCHERIANUM Cleve. Union.

C. COSTATUM Corda. Ledyard.

C. CYNTHIA DeNot. Bozrah.

C. DIANAE Ehrenb. Ansonia, Canaan, Cheshire, Cornwall, Montville, North Haven, Oxford, Old Lyme, Plainfield, Saybrook, Voluntown, Wallingford.

C. DIDYMOTOCUM Corda. Woodstock.

C. EHRENBERGII Menegh. Union, Voluntown.

C. INTERMEDIUM Ralfs. Ansonia, Bolton, East Haddam, New Britain, Saybrook, Tolland.

C. INCURVUM Bréb. Southbury.

C. JENNERI Ralfs. Griswold.

*C. GRACILE V. ELONGATUM W. & G. S. West. Preston.

C. KUTZINGII Bréb. Bolton, Cheshire, Montville, Salem, Voluntown, Waterbury.

C. LEIBLEINII Kütz. Cornwall, Ledyard.

C. LIBELLULA Focke. Ashford, Union, Waterbury.

C. LINEATUM Ehrenb. Bolton, Groton, Lisbon, Woodstock.

C. LUNULA (Müll.) Nitzsch. Cheshire, Old Lyme.

C. MONILIFERUM (Bory) Ehrenb. Ansonia, Brooklyn, Cheshire, Derby, East Haddam, Groton, Glastonbury, Kent, Ledyard, Lisbon, Meriden, Montville, New Britain, Naugatuck, Saybrook, Southbury, Thompson.

C. PSEUDODIANAE Roy. Lebanon, Griswold.

*C. PARVULUM var. ANGUSTATUM W. & G. S. West. Southbury.
C. PRONUM Bréb. Cheshire, Southbury.
C. PARVULUM Näg. Greenwich, Putnam, Wallingford.
C. RALFSII var. HYBRIDUM Rabenh. Cheshire, Putnam.
C. ROSTRATUM Ehrenb. Bozrah, Cheshire, East Haddam.
C. SETACEUM Ehrenb. Haddam, Plainfield, Voluntown.
C. TOXON West. Ashford, Ellington, Voluntown.
C. ULNA Focke. Old Lyme, Oxford, Waterbury.
C. VENUS Kütz. Ansonia, Ashford, Bolton, Glastonbury, Haddam, North Haven, Plainfield, Lisbon, Lebanon, Salem, Sterling, Seymour, Southbury, Tolland, Union, Voluntown, Waterbury, Wallingford, Woodstock.

DOCIDIUM Bréb.

D. BACULUM (Bréb.) DeBary. Waterbury.

PLEUROTAENIUM Näg.

P. CORONATUM (Bréb.) Rabenh. Voluntown.
P. NODOSUM (Bailey) Lund. Lebanon, Mountville, Tolland.
P. TRABECULA (Ehrenb.) Näg. Ansonia, Bolton, Canterbury, Cheshire, Eastford, Groton, Haddam, Ledyard, Meriden, New Britain, North Stonington, Old Lyme, Plainfield, Somers, Sterling, Southbury, Tolland.

TRIPLOCERAS Bailey.

T. GRACILE Bailey. Ledyard, North Stonington, Union.

TETMEMORUS Ralfs.

T. BREBISSONII (Menegh.) Ralfs. Union.

EUASTRUM Ehrenb.

E. ANSATUM Ralfs. Ashford, Oxford.
E. BIDENTATUM Näg. Bolton, Brooklyn, East Haddam, Greenwich, Ledyard, Lebanon, Plainfield, Putnam, Salem, Sterling, Tolland, Voluntown, Woodstock.
E. BINALE (Turp.) Ehrenb. Bozrah, Cheshire, Eastford, East Haddam, Essex, Lisbon, Plainfield, North Stonington, Seymour, Waterbury, Woodbury.
E. BINALE F. GUTWINSKII Schmidle. Bolton, Canterbury.
*E. BINALE var. RETUSUM West. Sterling.
*E. CRASSUM (Bréb.) Kütz. Ashford, Lebanon, Plainfield, Salem.

E. EVOLUTUM var. INTEGRIUS W. & G. S. West. Plainfield.
E. GEMMATUM Ralfs. Ashford.
E. INSULARE (Wittr.) Roy. Plainfield, Salem, Waterbury.
E. OBLONGUM (Grev.) Ralfs. Ledyard, Lebanon, Tolland.
E. PICTUM Borg. Ashford, Ellington, Griswold, Oxford, Putnam, Seymour, Tolland.
*E. SINUOSUM var. REDUCTUM W. & G. S. West. Lebanon.
E. VERRUCOSUM Ehrenb. Bolton, Woodstock.

MICRASTERIAS Ag.

M. AMERICANA (Ehrenb.) Ralfs. Groton, Woodstock, Voluntown
M. AMERICANA var. BOLDTII Gutw. Old Lyme, Wallingford.
M. APICULATA (Ehrenb.) Menegh. Voluntown.
*M. APICULATA var. FIMBRIATA (Ralfs) Nordst. Eastford.
M. CRUX-MELITENSIS (Ehrenb.) Hass. Wallingford.
M. DENTICULATA Bréb. Bolton, Ledyard, Tolland.
M. LATICEPS Nordst. East Haddam, Lebanon, Union, Voluntown, Waterbury, Woodbury.
M. MURICATA (Bailey) Ralfs. Ashford.
*M. MAHABULESHWARENSIS Hobs. North Stonington.
*M. PINNATIFIDA (Kütz.) Ralfs. Bolton, Union.
M. RADIATA Hass. Bolton, Lisbon, Somers, Woodstock.
M. ROTATA (Grev.) Ralfs. Griswold, Lebanon, Salem.
M. SOL (Ehrenb.) Kütz. Eastford, Ledyard, Southbury, Waterbury.
M. TRUNCATA (Corda) Bréb. Bolton, Salem, Tolland.

COSMARIUM Corda.

C. BOTRYTIS Menegh. East Haddam, North Haven.
*C. BREBISSONII Menegh. Ashford, North Stonington.
C. CONTRACTUM Kirch. Ansonia, Bolton, Warren, Waterbury.
C. BROOMEI Thwaites. Derby.
C. CUCUMIS Corda. Ledyard.
*C. CYCLICUM Lund. Union.
C. DENTATUM Wolle, North Stonington.
*C. DEPRESSUM v. ACHONDRUM (Boldt) W. & G. S. West. Ashford, Waterbury.
C. GALERITUM Nordst. Waterbury.
C. GRANATUM Bréb. Greenwich, Warren.

†*C. Eloisianum v. depressum W. & G. S. West. Voluntown.
C. Hammeri Reinsch. Bolton, Cornwall, North Haven, Somers.
C. Meneghinii Bréb. Waterbury.
*C. margaritatum (Lund.) Roy & Biss. Oxford, Union.
C. moniliforme Ralfs. Ledyard.
C. ovale Ralfs. Ansonia, Derby, Lebanon, Preston, Tolland, Union, Waterbury.
C. ornatum Ralfs. Ashford, Ellington, Eastford, Haddam, Ledyard, Salem, Thompson, Tolland.
*C. obsoletum (Hantzsch) Reinsch. Salem.
C. pyramidatum Bréb. Bolton, Ledyard.
C. pseudoconnatum Nordst. Ashford, Bolton, Derby, Lebanon, Old Lyme, Preston, Salem, Tolland, Union, Waterbury.
C. Portianum Arch. Ellington, East Haddam, Lisbon, Ledyard, North Haven, Salem, Tolland, Waterbury.
C. pseudopyramidatum Lund. Cornwall, Ledyard, Oxford, Old Lyme.
C. punctulatum Bréb. Bolton, Cornwall, Essex, Glastonbury, Haddam, Ledyard, Salem, Waterbury.
C. pygmaeum Arch. Bolton.
C. pseudobroomei Wolle. Eastford.
*C. pseudonitidulum v. validum W. & G. S. West. East Haddam.
C. quadrum Lund. Bozrah.
*C. Regnesii Reinsch. Oxford.
C. tumidum Lund. Tolland.
C. Turpinii Bréb. Warren, Wallingford.
C. undulatum Corda. Ashford, Bolton, Glastonbury, Lebanon, Salem, Thompson, Waterbury, Woodstock.

XANTHIDIUM Ehrenb.

X. antilopaeum (Bréb.) Kütz. Chaplin, Ellington, Griswold, Seymour, Tolland, Voluntown, Waterbury, Woodstock.
X. antilopaeum var. polymazum Nordst. Salem, Lisbon.
X. antilopaeum var. minneapoliense Wolle. Woodstock.
X. cristatum Bréb. Bolton, Griswold, Plainfield, Southbury, Tolland, Waterbury.

ARTHRODESMUS Ehrenb.

A. convergens Ehrenb. Bolton, Lisbon, Wallingford, Waterbury, Windham, Woodstock.

*A. INCUS (Bréb.) Hass. Waterbury.
A. OCTOCORNIS Ehrenb. Lisbon, Salem, Somers, Waterbury.

STAURASTRUM Meyen.

S. ACICULIFERUM (Borge) West. Bolton.
S. ARCTISCON (Ehrenb.) Lund. Bolton.
S. AVICULA Bréb. Bolton, Chaplin, Pomfret, Wallingford, Woodstock.
*S. ALTERNANS Bréb. Glastonbury, Southbury, Somers, Wallingford.
**S. BREVISPINUM F. MAJUS. W. & G. S. West. Bolton.
S. CRENULATUM Näg. Canterbury, Derby, North Haven, Seymour, Sterling, Tolland, Union, Waterbury, Warren.
S. CUSPIDATUM Bréb. Warren, Woodstock.
S. CYRTOCERUM Bréb. Bolton, East Haddam, Wallingford.
S. CORONULATUM Wolle. Tolland.
*S. CERASTES Lund. Oxford.
S. DILATATUM Ehrenb. North Haven, Ledyard.
*S. DICKIEI var. CIRCULARE Turn. Bolton, Warren.
S. DEJECTUM Bréb. Bolton, Lebanon, Somers, Voluntown, Waterbury.
S. EUSTEPHANUM (Ehrenb.) Ralfs. Bolton, Wallingford, Woodstock.
S. FURCIGERUM Bréb. Bolton.
S. GRANDE Bulph. Chaplin, Union.
*S. GLADIOSUM Turn. Lebanon, Salem, Waterbury, Woodstock.
S. GRACILE Ralfs. Ledyard, Woodbury.
*S. GRACILE var. BILBOSUM West. Putnam.
*S. GRACILE var. CYATHIFORME W. & G. S. West. Bolton.
*S. LACONIENSE W. & G. S. West. Lisbon.
S. LEPTOCLADUM Nordst. Groton.
*S. MAAMENSE Arch. Waterbury.
S. MUTICUM Bréb. Seymour.
*S. ORBICULARE Ralfs. Tolland.
S. OPHIURA Lund. Ledyard, Tolland.
S. PUNCTULATUM Bréb. Cornwall, Greenwich, Glastonbury, Lisbon, Lebanon, Plainville, Tolland.
*S. PILOSUM (Näg.) Arch. Oxford.
*S. PSEUDOTETRACERUM (Nordst.) W. & G. S. West. Bolton.
S. SEBALDI Reinsch. Wallingford.

S. spongiosum Bréb. Bolton.
S. tetracerum (Kütz.) Ralfs. Montville, Plainfield, Salem.
S. tumidum Bréb. Ashford, Voluntown.

SPHAEROZOSMA Corda.

*S. excavatum var. subquadratum W. & G. S. West. Waterbury.

ONYCHONEMA Wallich.

O. filiforme (Ehrenb.) Roy & Biss. Bolton, Union.
O. laeve Nordst. Bolton, Plainfield, Woodstock.

SPONDYLOSIUM Bréb.

S. papillosum W. & G. S. West. Lebanon, Lisbon, Plainville, Plainfield, Somers, Southbury, Waterbury, Wallingford, Windham.

S. pygmaeum (Cooke) West. Ashford, Bolton, Eastford, Plainfield, Salem, Woodstock.

HYALOTHECA Ehrenb.

H. dissiliens (Smith) Bréb. Ansonia, Andover, Bolton, Coventry, East Haddam, Glastonbury, Griswold, Lisbon, Ledyard, New Britain, Old Lyme, Preston, Plainfield, Voluntown, Windham.

*H. mucosa (Mert.) Ehrenb. Windham.

DESMIDIUM Ag.

D. aptogonum Bréb. Bolton, Ledyard.

D. Baileyi (Ralfs) Wolle. Ledyard, Lisbon, Plainfield, Somers, Tolland.

D. cylindricum Grev. Ellington, Preston, Windham.

D. Swartzii Ag. Bolton, Ellington, Canterbury, Lebanon, Lisbon. Old Lyme, Preston, Plainfield, Tolland, Voluntown, Wallingford.

Osborn Botanical Laboratory, *Yale University*.

FLORA OF PENIKESE, FIFTY YEARS AFTER.

Edited by I. F. Lewis.

(*Continued from page 196.*)

LIST OF SPECIES.

ALGAE.

A. Algae of Fresh Water (by Tracy E. Hazen).

Myxophyceae

Anabaena oscillarioides Bory, var. stenospora Born. et Flah.
Calothrix epiphytica W. et G. S. West.
Cylindrospermum majus Kuetz.
Microcystis sp.
Nodularia paludosa Wolle.
Nostoc sp.
Oscillatoria splendida Grev.
Oscillatoria tenuis Ag.
Oscillatoria sp.
Phormidium tenue (Menegh.) Gom.

Heterokontae

Botryococcus Braunii Kuetz.
Tribonema bombycinum (Ag.) Derb. et Sol.
Tribonema utriculosum (Kuetz.) Hazen.

Chlorophyceae

Ankistrodesmus falcatus Ralfs.
Asterococcus limneticus G. M. Smith.
Botrydium granulatum Grev.
Bulbochaete sp. (sterile).
Characium ambiguum Herm.
Chlamydomonas (three undetermined species).
Chlorella vulgaris Beyer.
Closterium Ehrenbergii Menegh.
Closterium sp.
Cosmarium (two species).
Elakatothrix gelatinosa Wille.

Glaucocystis nostochinearum Itzigs.
Herposteiron confervicola Naeg.
Keratococcus caudatus Pascher.
Micrasterias sp.
Microthamnion Kuetzingianum Naeg.
Microspora Willeana Lagerh.
Mougeotia sp.
Myxonema sp. (juvenile).
Oedogonium sp.
Oocystis sp.
Palmodictyon varium Lemm.
Pandorina morum Bory.
Platymonas subcordiformis (Wille) Hazen.
Pleurococcus vulgaris Naeg.
Protosiphon botryoides (Kuetz.) Klebs.
Scenedesmus brasiliensis Bohlin.
Sphaerella lacustris (Girod.) Wittr.
Spirogyra sp.
Staurastrum sp.
Stichococcus bacillaris Naeg.
Stichococcus flaccidus (Kuetz.) Gay.
Vaucheria sessilis (Vauch.) DC.
Zygnema sp. (sterile).

D. Marine Algae[1] (by W. R. Taylor).

Myxophyceae

*Anabaena torulosa (Carm.) Lagerh.
Calothrix confervicola (Dillw.) Ag.
*Calothrix crustacea Thuret.
*Calothrix fusco-violacea Crouan.
*Calothrix parasitica (Chauv.) Thuret.
Calothrix scopulorum (Web. et Mohr) Ag.
*Hyella caespitosa Born. et Flah.
*Isactis plana (Harv.) Thuret.
*Lyngbya aestuarii (Mert.) Liebm.
*Mastigocoleus testarum Lagerh.
*Oscillatoria margaritifera Kuetz.
*Phormidium papyraceum (Ag.) Gom.
*Rivularia atra Roth.

[1] Species marked with an asterisk were not found by Jordan.

Chlorophyceae

*Chaetomorpha Linum (Fl. Dan.) Kuetz.
Chaetomorpha Melagonium (Web. et Mohr) Kuetz.
Cladophora albida (Huds.) Kuetz.
*Cladophora albida var. refracta Thuret.
Cladophora expansa (Mert.) Kuetz.
*Endoderma Wittrockii (Wille) Lagerh.
Enteromorpha compressa (L.) Grev.
Enteromorpha intestinalis (L.) Link.
*Enteromorpha Linza (L.) J. Ag.
*Enteromorpha minima Naeg.
Enteromorpha plumosa Kuetz.
*Gomontia polyrhiza (Lagerh.) Born. et Thuret.
*Prasiola stipitata Suhr.
*Protoderma marinum Reinke.
*Rhizoclonium Kerneri Stockm.
Spongomorpha lanosa (Roth.) Kuetz. var. uncialis (Fl. Dan.) Kjell.
Ulva Lactuca (L.) LeJolis.

Phaeophyceae

Ascophyllum nodosum (L.) LeJolis.
Asperococcus echinatus (Mert.) Grev.
*Castagnea virescens (Carm.) Thuret.
*Castagnea Zosterae (Mohr) Thuret.
*Chorda Filum (L.) Stackh.
Chordaria flagelliformis (Fl. Dan.) Ag.
*Desmarestia aculeata (L.) Lamour.
Desmarestia viridis (Fl. Dan.) Lamour.
Desmotrichum undulatum (J. Ag.) Reinke.
Dictyosiphon foeniculaceus (Huds.) Grev.
*Ectocarpus confervoides (Roth) LeJolis.
*Ectocarpus confervoides var. hiemalis (Crouan) Kuckuck.
*Ectocarpus fasciculatus Harv.
Ectocarpus siliculosus (Dillw.) Ag.
*Ectocarpus tomentosus (Huds.) Lyngb.
Elachistea fucicola (Velley) Fries.
Fucus vesiculosus L.
Laminaria Agardhii Kjellm.
Laminaria digitata (L.) Lamx.

*Laminaria Platymeris De La Pyl.
Leathesia difformis (L.) Aresch.
Mesogloia divaricata (Ag.) Kuetz.
*Myrionema Leclancheri (Chauv.) Harv.
Petalonia fascia (Mueller) Kuntze.
*Petalonia fascia var. caespitosa (LeJolis) Hauck et Richt.
*Punctaria latifolia Grev.
Pylaiella littoralis (L.) Kjellm.
*Ralfsia verrucosa Aresch.
*Scytosiphon lomentarius (L.) Lyngb.
Sphacelaria cirrhosa (Roth) O. Ag.

Rhodophyceae

Acrochaetium virgatulum (Harv.) J. Ag.
*Actinococcus subcutaneus (Lyngb.) Schmitz.
Annfeldtia plicata (Turn.) Fries.
*Antithamnion cruciatum (Ag.) Naeg.
Callithamnion corymbosum (Eng. Bot.) Ag.
Ceramium fastigiatum Harv.
Ceramium rubrum (Huds.) Ag.
*Ceramium strictum (Kuetz.) Harv.
Champia parvula (Ag.) Harv.
*Chondria tenuissima (Good. et Wood) Ag. var. Baileyana (Mont.) Farlow.
Chondrus crispus (L.) Stackh.
*Choreocolax Polysiphoniae Reinsch.
Corallina officinalis L.
Cystoclonium purpurascens (Huds.) Kuetz.
*Cystoclonium purpurascens var. cirrhosa Harv.
*Cystoclonium purpurascens var. stellata Collins.
Delesseria sinuosa (Good. et Woodw.) Lamour.
*Erythrotrichia ceramicola (Lyngb.) Aresch.
Grinnellia americana (Ag.) Harv.
*Hildenbrandtia Prototypus Nardo.
Lithothamnion Lenormandi (Aresch.) Foslie (?).
*Melobesia LeJolisii Rosanoff.
*Melobesia pustulata Lamour.
*Nemalion multifidum (Web. et Mohr) J. Ag.
Phyllophora Brodaei (Turn.) J. Ag.

*Phyllophora membranifolia (Good. et Woodw.) J. Ag.
Plumaria elegans (Bonnem.) Schmitz.
Polysiphonia elongata (Huds.) Harv.
Polysiphonia fastigiata (Roth) Grev.
*Polysiphonia fibrillosa (Dillw.) Grev.
Polysiphonia nigrescens (Dillw.) Grev.
*Polysiphonia nigrescens var. Durkeei Harv.
*Polysiphonia nigrescens var. fucoides Harv.
Polysiphonia urceolata (Dillw.) Grev. var. formosa (Suhr.) Ag.
*Polysiphonia urceolata var. patens (Dillw.) Grev.
Polysiphonia violacea (Roth) Grev.
*Polysiphonia violacea var. flexicaulis Harv.
Porphyra laciniata (Lightf.) Ag.
*Rhododermis Georgii (Batters) Collins.
Rhodomela subfusca (Woodw.) Ag.
Rhodymenia palmata (L.) Grev.
Seirospora Griffithsiana Harv.
Spermothamnion Turneri (Mart.) Aresch.
Spyridia filamentosa (Wulf.) Harv.

B. Algae of Brackish Water (by Tracy E. Hazen).

Arthrospira Gomontiana Setchell.
Chlorella vulgaris Beyer.
Enteromorpha intestinalis (L.) Link.
Lyngbya aestuarii (Mert.) Liebm.
Oscillatoria amphibia Ag.
Oscillatoria margaritifera (Kuetz.) Gom.
Oscillatoria subuliformis (Thw.) Gom.
Oscillatoria sp.
Spirulina tenuissima Kuetz.

(In addition to the algae listed, certain alga-like bacteria are common in the brackish ponds, such as *Beggiatoa mirabilis*, *Beggiatoa alba marina*, and *Lamprocystis roseo-persicina*.)

C. Diatoms (by Paul S. Conger).

Achnanthes longipes Ag.
Actinocyclus crassus W. S.
Actinocyclus Ehrenbergii Ralfs.
Actinoptychus undulatus E.

Amphora Grevilleana Greg.
Amphora obtusa Greg.
Auliscus caelatus Bail.
Auliscus caelatus var. strigillata A. S.
Biddulphia Favus (E.) V. H.
Campylodiscus Thuretii Bréb.
Chaetoceros coarctatum Laud.
Chaetoceros decipiens Cl.
Chaetoceros didymum E.
Chaetoceros (Bacteriastrum) varians Laud. forma furcata Grun.
Cocconeis scutellum E.
Coscinodiscus excentricus E.
Coscinodiscus Oculus-Iridis var. Morsiana Grun.
Coscinodiscus nodulifer A. S. (Wide Variety).
Coscinodiscus radiatus E.
Cyclotella comta (E.) K.
Eupodiscus Argus E. (=Aulacodiscus Argus (E.) A. S.).
Fragillaria hyalina K.
Grammatophora macilenta W. S.
Grammatophora marina Grun.
Grammatophora serpentina E.
Hantzschia amphioxys Grun.
Hantzschia marina (Donk.) Grun.
Hyalodiscus stelliger Bail.
Licmophora flabellata Ag.
Licmophora Lyngbyei K.
Licmophora tincta (Ag.) Grun.
Mastogloia exigua Lewis.
Melosira Borreri Grev.
Melosira sulcata K.
Melosira sulcata forma coronata Grun.
Navicula ambigua Cl.
Navicula aspera E.
Navicula Bombus E.
Navicula borealis E.
Navicula Brauni Grun.
Navicula clavata var. caribaea Cl.
Navicula dicephala (E.) W. S.
Navicula didyma K. & E.

Navicula (Pinnularia) distans W. S.
Navicula elegans W. S.
Navicula exempta W. S.
Navicula forcipata var. densistriata A. S.
Navicula formosa Greg.
Navicula fusca Greg.
Navicula (Stauroneis) gracilis E.
Navicula (Stauroneis) Gregorii Ralfs.
Navicula Hantzschiana Rab.
Navicula Hennedeyi W. S.
Navicula humerosa Bréb.
Navicula interrupta K.
Navicula Lyra E.
Navicula Lyra var. dilatata A. S.
Navicula Lyra var. elliptica A. S.
Navicula maxima Greg.
Navicula major K.
Navicula nanella P. C. sp. n.
Navicula notabilis var. expleta A. S.
Navicula palpebralis var. angulosa Greg.
Navicula peregrina E.
Navicula quadratarea A. S.
Navicula rhynchocephala K.
Navicula Smithii Bréb.
Navicula suborbicularis Greg.
Navicula viridis Nitzsch.
Navicula viridula K.
Navicula Yarrensis Grun.
Navicula sp. indet.
Navicula sp. indet.
Nitzschia closterium (E.) W. S.
Nitzschia fonticola Grun.
Nitzschia frustulum var. perminuta Grun.
Nitzschia longissima (Bréb.) Ralfs.
Nitzschia Sigma (K.) W. S.
Nitzschia scalaris W. S.—(wide variety).
Pleurosigma aestuarii W. S.
Pleurosigma affine Grun.
Pleurosigma elongatum W. S.

Podocystis Americana Bail. (=Podocystis Adriatica K.).
Pseudo-eunotia doliolus (Wall.) Grun.
Rhabdonema Adriaticum K.
Rhizosolenia hebetata forma semispina (Hensen) Gran.
Rhizosolenia setigera Brightw.
Scoliopleura latestriata (Bréb.) Cl.
Striatella unipunctata Ag.
Surirella Mölleriana Grun.
Surirella recedens A. S.
Synedra Gaillonii var. macilenta Grun.
Synedra Hennedeyana Greg.
Tabellaria fenestrata (Lyngb.) K.
Trigonium alternans E.
Tropidoneis Lepidoptera (Greg.) Cl.
Number of genera—34; Number of species—96.

E. Fungi.[1]

Achlya sp.
Cystopus candidus (Pers.) Lev.
Daedalea quercina (L.) Pers.
Empusa sp.
Erysiphe cichoracearum D. C.
Erysiphe communis (Wallr.) Fr.
Exoascus Pruni Fuck.
Fomes applanatus (Pers.) Gillet.
Fuligo septica Gmel.
Hypoxylon sp.
Irpex sp.
Naucoria sp.
Ovularia obliqua (Cke.) Oud.
Phyllosticta labruscae Thuem.
Plasmopara viticola (Berk. et Curt.) Berl. et DeToni.
Polystictus versicolor (L.) Fr.
Puccinia malvacearum Mont.
Puccinia Phlei-pratensis Erikss. et Henn.
Puccinia triticina Erikss.
Puccinia sp. (on Taraxacum).
Puccinia sp. (on Cirsium).

[1] The list of fungi here given is known to be incomplete, but offers some indication of the fungous vegetation found on the island.

Septoria oenotherae West.
Uromyces trifolii (Hedw. f.) Lev.

F. Bryophyta (by S. F. Cook).

Aulacomnium palustre Schwaegr. Small quantity mixed with Brachythecium.

Brachythecium acutum Sulliv. Typha and Tern Ponds.

Bryum argenteum L. General in sandy spots.

Catherinea angustata Brid. Fairly common on damp soil.

Ceratodon purpureus Brid. Universal on sandy, exposed spots.

Dicranum flagellare Hedw. Fairly common on damp soil.

Ditrichum pallidum (Schreb.) Hampe. Fairly common on damp soil.

Lophocolea heterophylla. One spot, under a moist bank, northeast corner of island.

Mnium punctatum Hedw. Small quantity mixed with Brachythecium.

Polytrichum commune L. General in open spots.

Polytrichum juniperinum Willd. Same.

Polytrichum piliferum Schreb. Same.

G. Pteridophyta (by Alma G. Stokey).

*Athyrium Filix-femina (L.) Roth. South end of island.

*Aspidium Thelypteris (L.) Sw. Low wet places, Typha and Tub Ponds.

Dennstaedtia punctilobula (Michx.) Moore [*Dicksonia punctilobula* (Michx.) Gray]. Around reservoir.

H. Spermatophyta.[1]

Pinaceae

*Pinus sylvestris L. Hospital grounds.

Typhaceae

*Typha latifolia L. Typha and South Ponds.

Najadaceae

Zostera marina L. Harbor and elsewhere in shallow water.

(To be continued.)

[1] By John M. Fogg, Jr. Synonyms used by Jordan in brackets. Species marked with an asterisk not found by Jordan.

Two Additions to the Flora of Rhode Island.—In October, 1924, the writer collected in Rhode Island two plants that apparently have not been reported as occurring in the state. One of these, *Tridens flavus* (L.) Hitchc., was found on the slope of Neutaconkanut Hill, Providence, under conditions strongly suggesting that the plant had not been introduced. Gray's Manual (1908) gives the range as "Ct. to Mo. and southw." Since then this grass has been reported from Nantucket, Martha's Vineyard and Southboro, Massachusetts (see Rhodora **16:** 82, May, 1914), and it has been collected elsewhere in Massachusetts.

The other plant is *Polygonum puritanorum* Fernald. This was collected in a sandy cart-path through a salt marsh near Point Judith, South Kingstown. It has been reported from various stations on Cape Cod, Massachusetts (Fernald in Rhodora **21:** 141, August, 1919).—J. Franklin Collins, Providence, Rhode Island.

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Farlow Bot. Lab.

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 26. December, 1924. No. 312.

NOTES ON SOME PLANTS OF EASTERN NEW YORK.

H. K. Svenson.

The following account is concerned with some noteworthy plants of eastern New York, at least two of them being new to the State. Unfortunately these records were not communicated to Dr. House in time for publication in the recent list of the plants of New York State.[1]

Bidens bidentoides (Nutt.) Britton. A single specimen of this characteristic species, known previously only from the region of Delaware Bay, was collected by Mr. N. C. Fassett of Harvard University, on the shore of the Hudson River at Glenmont, in September 1922. A visit by the writer to this locality in October 1922, revealed no further material, but across the river in Rensselaer the plant was found in abundance in shallow water, partially submersed at high tide. At Hudson, some thirty miles below Glenmont, in October 1923, it appeared commonly on tidal shores. It is therefore to be looked for throughout the Hudson estuary.

Elatine americana (Pursh) Arnott. Described by Fernald[2] as occurring "on tidal flats of Cathance River in Maine and on the tidal flats of the Delaware, as well as at a few other stations along the Atlantic coast." This plant was collected on tidal mud at Hudson, N. Y. in October 1923, and is probably the first true record from New York State. Two additional records for this rare plant are from New Brunswick: tidal shores of Kennebecasis River, Lakeside, August 25, 1923, *Fassett & Svenson*, no. 2015; tidal shores, Mirimichi River, five miles above Newcastle, August 19, 1923, *Fassett & Svenson*, no. 2016.

[1] House, H. D.; N. Y. State Mus. Bull. no. 254 (1924).

[2] Fernald, M. L., Rhodora xix. 11 (1917).

ALCHEMILLA VULGARIS L.; Fernald & Weigand, RHODORA xiv. 232 (1912). First noted in the fall of 1923, growing in a cool, shady spot on the campus of Union College, but may have existed there previously. It has persisted in flowering state through the summer of 1924 and may be said to be well established. From the United States the lady's mantle has been previously reported only as casual at Westford, Massachusetts. It is a well-known weed in Nova Scotia.

Eleocharis diandra C. Wright. This occurs with *Elatine americana* on tidal mud at Hudson, N. Y.

Scirpus Smithii Gray. On tidal mud at Coeymans, N. Y., October 1923, accompanied by *Limosella subulata* Ives.[1] These are stations additional to those given by House in the list previously mentioned.

The writer is indebted to Mr. Fassett for comparing specimens of most of the preceding plants with typical specmens in the Gray Herbarium.

UNION COLLEGE, Schenectady.

FLORA OF PENIKESE, FIFTY YEARS AFTER.

Edited by I. F. LEWIS.

(*Continued from page 219.*)

Gramineae

Agropyron repens (L.) Beauv. [*Triticum repens* L.]. Common.

Agrostis capillaris L. [*A. vulgaris* With.]. Common, hills and beaches.

Ammophila breviligulata Fernald [*Calamogrostis arenaria* Roth]. Beaches.

Anthoxanthum odoratum L. Common over entire island.

*Avena sativa L. Behind cottages and on Tub Point.

*Bromus secalinus L. Waste ground, east; rare.

Chaetochloa sp. [*Setaria* sp.]. Dry Pond.

*Dactylis glomerata L. Fairly common, beaches and hillsides.

*Danthonia spicata L. (Beauv.). Grassland everywhere.

Elymus virginicus L. Low wet places, west; also Gull Island.

Festuca elatior L. Fairly common, dry soil.

[1] For nomenclature see Fernald, M. L., RHODORA xx. 164 (1918).

*Festuca rubra L. Common in dry soil.

Holcus lanatus L. Common everywhere.

*Panicum Lindheimeri Nash var. fasciculatum (Torr.) Fernald. Dry sandy soil.

*Panicum oricola Hitch. & Chase. Fairly common, dry soil.

Phleum pratense L. Fairly common.

Poa pratensis L. Fairly common.

Spartina alterniflora Loisel. [*S. stricta* Roth var. *alterniflora* Gray]. Moist ground, eastern shore; Gull Island.

Spartina patens (Ait.) Muhl. [*S. juncea* Willd.]. Low marshy ground, Tub Point.

Cyperaceae

*Carex albolutescens Schwein. (*C. Longii* Mack.) Dry soil on Neck and elsewhere.

*Carex muricata L. Barren ground, rare.

*Eleocharis obtusa (Willd.) Schultes. Edge of ponds.

Eleocharis palustris (L.) R. & S. Leper Pond.

Scirpus americanus Pers. [*S. pungens* Vahl]. Typha and South Ponds.

Scirpus paludosus A. Nelson [*S. maritimus* L.]. Ponds and swamp.

*Scirpus validus Vahl. Tern Pond.

Juncaceae

*Juncus acuminatus Michx. Typha Pond.

*Juncus debilis Gray. Dry sandy ground.

*Juncus effusus L. Leper Pond.

*Juncus Greenei Oakes & Tuck. Common on grassy uplands.

Juncus tenuis Willd. Sandy and gravelly places near beaches.

Liliaceae

*Asparagus officinalis L. Eastern shore and behind cottages.

*Lilium tigrinum Ker. Behind cottages.

*Smilax rotundifolia L. Dry hillside above hospital.

Iridaceae

Iris versicolor L. Typha and South Ponds; elsewhere in moist places.

Sisyrhinchium angustifolium Mill. [*S. Bermudianum* L.]. South Pond.

Myricaceae

*Myrica carolinensis Mill. One patch near south shore.

Salicaceae

*Populus alba L. Hospital grounds.
*Populus deltoides Marsh. Hospital grounds.
*Salix alba × fragilis. Typha Pond and elsewhere.
*Salix pentandra L. Typha Pond and along eastern shore.

Fagaceae

*Quercus rubra L. West of hospital and along path near wharf.

Polygonaceae

*Polygonum acre HBK. Moist edges of ponds.
Polygonum aviculare L. Sandy soil; beach; garden.
*Polygonum Convolvulus L. Tub Point.
Polygonum Persicaria L. Dry Pond.
Rumex Acetosella L. Common in dry barren soil.
Rumex crispus L. Common in dry ground; Gull Island.
*Rumex maritimus L. var. fueginus (Phil.) Dusen. Edge of Typha Pond.

Chenopodiaceae

*Atriplex hastata L. Very common on beaches; Gull Island.
Chenopodium album L. Fairly common on beaches.

Amaranthaceae

Amaranthus retroflexus L. Tern nesting ground; Tub Point.

Aizouceae

Mollugo verticillata L. In sand near garden.

Caryophyllaceae

Ammodenia peploides Rupr. [*Arenaria peploides* L.]. Occasional, beaches.
*Cerastium vulgatum L. Abundant in dry barren ground.
*Dianthus barbatus L. (Escaped.) Behind cottages.
*Gypsophila paniculata L. (Escaped.) Behind cottages.
*Lychnis alba Mill. Tub Point.

Sagina procumbens L. Stony soil on Neck.

Spergularia marina (L.) Griseb. [*S. salina* Presl.]. Rare, beach on eastern side.

*Spergularia rubra (L.) Presl. Common in stony barren ground.

*Stellaria graminea L. Dry grassland, not common.

Stellaria media (L.) Cyrill. [*S. media* Smith]. Behind cottages and near hospital.

Portulacaceae

Portulaca oleracea L. Garden.

Ranunculaceae

*Ranunculus acris L. Behind cottages and occasional in grassland.

Ranunculus Cymbalaria Pursh. Tern Pond.

*Ranunculus delphinifolius Torr. Tern Pond.

Cruciferae

*Brassica juncea (L.) Cosson. High ground, Tub Point.

Cakile edentula (Bigel.) Hook [*C. americana* Nutt.]. Beaches; Gull Island.

Capsella Bursa-pastoris (L.) Medic. Near hospital.

Lepidium virginicum L. Dry soil, common.

Raphanus Raphanistrum L. Tub Point.

*Raphanus sativus L. (Escaped.) Behind cottages.

*Sisymbrium altissimum L. Tub Point and east shore.

Sisymbrium officinale (L.) Scop. Fairly common, beaches and near hospital.

Rosaceae

*Amelanchier oblongifolia (T. & G.) Roem. South end of island.

Fragaria virginiana Duchesne. West of hospital.

Potentilla argentea L. Behind cottages and on dry soil near beaches.

*Potentilla monspeliensis L.

*Potentilla pumila Poir. Fairly common on dry hillsides.

*Rosa carolina L.

*Rosa rugosa Thunb. (Escaped.) Occasional.

*Rubus frondosus Bigel. Dense thicket, Tub Point.

*Rubus laciniatus Willd. Tub Point.

Rubus procumbens Muhl. [*R. villosus* Ait.]. Common locally, in patches.

*Prunus serotina Ehrb. South end of island.

Leguminosae

Lathyrus maritimus (L.) Bigel. Edge of beaches; Gull Island.
*Trifolium agrarium L. Hillside west of hospital.
Trifolium arvense L. Fairly common, dry fields.
*Trifolium pratense L. Along walk near wharf.
Trifolium repens L. Dry fields.
*Vicia Cracca L. East shore.
*Vicia tetrasperma (L.) Moench.

Oxalidaceae

Oxalis stricta L. Dry barren ground; near hospital.

Geraniaceae

*Geranium carolinianum L. Burnt-over place near hospital.

Callitrichaceae

*Callitriche heterophylla Pursh. Typha Pond.

Anacardiaceae

*Rhus typhina L. Hillside west of hospital.

Vitaceae

*Psedera quinquefolia (L.) Greene. Over old sheds near hospital.

Malvaceae

Malva rotundifolia L. Behind cottages.

Aceraceae

*Acer platanoides L. Established on slope above hospital.

Violaceae

Viola fimbriatula Sm. [*V. sagittata* Ait. (?)]. Dry hills, south end of island.

Hypericaceae

*Hypericum perforatum L. Occasional in grassland.

Onagraceae

Isnardia palustris L. [*Ludwigia palustris* L.]. Typha Pond.
*Oenothera biennis L. Occasional in grassland and near beaches.
*Oenothera grandiflora Ait. (Escaped.) Behind cottages.

Haloragidaceae

Myriophyllum pinnatum (Walt.) B. S. P. [*M. scabratum* Mx.]. Typha and Tern Ponds.

Umbelliferae

*Daucus Carota L. Dry soil throughout.
*Ligusticum scothicum L. Beaches.

Primulaceae

Anagallis arvensis L. Behind cottages and near wharf.

Oleaceae

*Ligustrum vulgare L. (Escaped.) Behind cottages.

Asclepiadaceae

*Asclepias syriaca L. Rare.

Convolvulaceae

*Convolvulus arvensis L. Dry stony soil on Neck.
Convolvulus sepium L. var. pubescens (Gray) Fernald [*Calystegia sepium* R. Br.]. Fairly common; Gull Island.

Labiatae

Leonurus Cardiaca L. Locally abundant; Tub Point and Neck.
*Lycopus americanus Muhl. Typha Pond.
*Lycopus uniflorus Michx. Low wet places.
Nepeta Cataria L. Patches near reservoir and hospital.
Scutellaria epilobiifolia Hamilton [*S. galericulata* L.]. Typha Pond.
Teucrium canadense L. var. littorale (Bick.) Fernald. Gull Island only.

Solanaceae

*Datura Stramonium L. Beach south of wharf.
Solanum nigrum L. Common, edges of Dry Pond.

Scrophulariaceae

*Digitalis purpurea L. (Escaped.) Behind cottages.
*Ilysanthes inequalis (Walt.) Pennell. Typha Pond.
Linaria canadensis (L.) Dumont. Common, dry sandy soil.
*Linaria vulgaris Hill. Behind cottages.
Verbascum Thapsus L. Fairly common around east shore.

Plantaginaceae

Plantago lanceolata L. Abundant, especially near shore.
Plantago major L. Abundant, south and east shore.

Rubiaceae

*Galium trifidum L. Fairly common on hills, south end.

Caprifoliaceae

*Lonicera japonica Thunb. Established locally, Tub Point and elsewhere.
*Sambucus canadensis L. North end of island near Dry Pond.

Cucurbitaceae

*Cucurbita maxima Duchesne. (Escaped.) Behind cottages and on Neck.

Compositae

Achillea Millefolium L. Common; also Gull Island.
Ambrosia artemisiifolia L. Common; also Gull Island.
Anthemis Cotula L. [*Maruta Cotula* DC.]. Near hospital.
*Aster undulatus L. Dry soil.
*Aster vimineus Lam. Dry soil.
*Bidens connata Muhl. var.? Dry Pond.
Chrysanthemum Leucanthemum L. [*Leucanthemum vulgare* Lam.]. Common throughout.
Cirsium arvense (L.) Scop. South end of island.
Cirsium lanceolatum (L.) Hill. Hills, not common.
*Coreopsis lanceolata L. (Escaped.) Behind cottages.
Erechtites hieracifolia (L.) Raf. Beaches, common.
*Euthamia tenuifolia (Pursh) Greene. Western slopes.
*Gnaphalium polycephalium Michx. Dry hillsides.
*Helianthus annuus L. Tub Point.
*Leontodon autumnalis L. var. pratensis (Link) Koch. Behind cottages.
Leptilon canadense (L.) Britton [*Erigeron canadense* L.]. Near hospital.
*Leptilon pusillum (Nutt.) Britton. Near hospital.
*Rudbeckia hirta L. Hills on east side.
*Solidago canadensis L. Southwest slopes.
*Solidago juncea Ait. Dry bank, S. W.

*Solidago nemoralis Ait. Hillsides, south end.
*Solidago rugosa Mill var.? Hillsides, east end.
Solidago sempervirens L. Common on beaches; also Gull Island.
*Sonchus arvensis L. Hill west of hospital.
*Sonchus asper (L.) Hill. Near wharf.
*Sonchus oleraceus L. Near beaches.
Taraxacum officinale Weber [*T. Dens-Leonis* Desf.]. Not common.
Xanthium sp. Typha Pond.

A complete set of exsiccatae of marine algae and land plants (except fungi) has been deposited in the herbarium of the Marine Biological Laboratory, and duplicates at the herbarium of the University of Pennsylvania and at the Gray Herbarium of Harvard University.

Explanation of Plates 146 and 147.

The five views reproduced on plates 146 and 147 correspond to photographs numbered 1, 2, 4, 11 and 12, respectively, in a series of fifteen views taken for the purpose of record and to be preserved at the Marine Biological Laboratory at Woods Hole. The points from which these views were taken are indicated on the map.

Plate 146. Upper view: Looking up the Neck, showing strand (phot. no. 1). Middle view: Same, looking over tidal flat toward hospital (phot. no. 2). Lower view: Typha Pond, looking southwest toward outbuildings in hospital grounds (phot. no. 4).

Plate 147. Upper view: Looking southeast across area denuded by nesting terns (phot. no. 11). Lower view: Dry Pond, looking north (from phot. no. 12).

DOUBLE-HEADED GENERIC NAMES.

Kenneth K. Mackenzie.

Hill's British Herbal published in 1756 is a most excellent piece of work. The various genera and species are fully described, and all of the genera are carefully and well illustrated. Unfortunately Hill, in company with some other writers of his time, had ideas of his own about generic names. Most of the genera recognized by him were given by him under generic names consisting of but one word, and, of course, as to these there is no trouble. But in addition to such generic names he had some fifty-one other genera, to which he gave generic names consisting of two separate words. He never used a hyphen connecting the two words so used by him in order to form

a compound word but he always wrote them as two separate words. Under genera so named he listed various species. For example he had a genus (p. 409) *Pimpinella saxifraga* and under it three species *Pimpinella saxifraga foliis variis; Pimpinella saxifraga minor;* and *Pimpinella saxifraga foliis laciniatis.* Sometimes, however, the specific name would not entirely follow the generic name. For example, he had a genus *Lactuca Hortensis* (p. 444) but the only species under it was named *Lactuca vulgaris.* Hill's ideas on nomenclature are indeed very hard to follow, for he even had two genera of the same name, *Lunaria,* one belonging to the *Cruciferae* (p. 258) and the other (p. 530) being *Botrychium.*

Most of Hill's double-headed generic names apply to genera which were given other generic names by Linnaeus, but there are a very considerable number of such names which are the earliest generic names for the genera involved published after 1753. If we use one of these names they all should be used. If we reject some we should reject them all. If we insert a hyphen with some, so as to make them compound words, we should insert a hyphen with them all.

My own view is that all such names should be entirely rejected and that the rule promulgated by Linnaeus should be followed "Nomina generica ex duobus vocabulis integris, ac distinctis facta, e Republica Botanica releganda sunt" (Philosophia Botanica Sec. 221). This is the rule whch has almost invariably been followed by botanists in practice.

How important is the question involved, is shown by the following examples taken from Hill's work:

(1) *Speculum Veneris* (p. 75) antedates *Specularia* Heist. (1763).

(2) *Bursa pastoris* (p. 260) antedates *Bursa* Weber (1780) and *Capsella* Medic. (1792).

(3) *Raphanus rusticanus* (p. 260) antedates *Armoracia* Ludwig (1757).

(4) *Gramen caninum* (p. 496) antedates *Agropyron* J. Gaertn. (1770).

(5) *Gramen nemorosum* (p. 502) antedates *Juncoides* Adans. (1763) and *Luzula* D.C. (1805).

(6) *Filix mas* (p. 527) antedates *Thelypteris* Schmidel (1762): *Dryopteris* Adans. (1763); and *Aspidium* Sw. (1801).

(7) *Filix foemina* (p. 528) antedates *Pteridium* Scop. (1760).

One of Hill's double-headed genera, described by him on page 516

is *Vitis idea* (*Vitis idaea* in his Index). This has been taken up as *Vitis-idaea*. It seems to me that the use of this name should be given up.

A similar double-headed generic name is *Uva Ursi*. This was used by Miller (Gard. Dict. Abr. Ed. 4) in 1754, and as *Uva-Ursi* has been taken up in place of *Arctostaphylos* Adans. (1763). It seems to me that the use of this name should also be abandoned. The alternative would be to retain *Vitis-idaea* and *Uva-Ursi* and also take up *Speculum-Veneris*, *Bursa-pastoris*, *Raphanus-rusticanus*, *Gramen-caninum*, *Gramen-nemorosum*, *Filix-mas*, and *Filix-foemina*.

Maplewood, New Jersey.

A yellow-fruited form of Ilex myrtifolia.—The fruit of all our native species of *Ilex*, except *I. glabra*, *I. lucida*, and *I. Krugiana*, is normally some shade of red or orange. Yellow-fruited forms have been described in *I. opaca* (f. *xanthocarpa* Rehder), *I. laevigata* (f. *Herveyi* Robinson), and *I. verticillata* (f. *chrysocarpa* Robinson). A form of *Ilex cassine* with yellow fruit is mentioned in the manuals, but seems never to have received a name. Yellow-fruited specimens of *Ilex myrtifolia* Walt., a species closely related to *I. cassine* but apparently distinct, were received at the Bureau of Plant Industry in December, 1922, from Mr. George D. Lowe, who had collected them at Baxley, Georgia. More ample specimens have recently been sent by Mr. Lowe, who comments on the attractive appearance of the yellow-fruited shrub, and states that it is known to him only from a small area in the vicinity of Baxley, usually occurring singly at widely separated points, but at one locality about a cypress pond forming about half of the stand, and amounting probably to a thousand plants in a quarter-mile radius. The yellow form has been observed at this last spot for thirty years or more. In view of the possibility of the introduction of this plant into the nursery trade, it may well be distinguished by a formal name.

Ilex myrtifolia forma **Lowei**, forma nova.—Fruit golden yellow; leaves linear-elliptic or elliptic, 8–21 mm. long, 2–4 mm. wide.—Georgia: Vicinity of Baxley, November, 1923, *George D. Lowe* (type no. 1, 189, 988, U. S. Nat. Herb.; dupls. in herb. Arnold Arb., Gray Herb., N. Y. Bot. Gard.).—S. F. Blake, Bureau of Plant Industry, Washington, D. C.

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ERRATA

Page 10, line 23, *for* CALYPHOGEIA *read* CALYPOGEIA.
" 17, " 10, for **Dipsaceae** *read* **Dipsacaceae.**
" 18, " 5, *for* D. MELO *read* C. MELO.
" 19, " 7, *for* **perfoliata** *read* **perfoliata.**
" 34, " 21, *for* ACHILLAEA *read* ACHILLEA.
" 50, " 2, *for* rejicienda read *rejicienda.*
" 54, " 31, *for* Mason *read* Maxon.
" 56, " 20, *for* (Lindh.) *read* (Lindl.).
" 60, " 18, *for* 56 *read* lvi.
" 70, " 45, for *Austineae* read *Austinae.*
" 71, " 12, *for* **canescens** *read* CANESCENS.
" 80, " 36, *for* 7 cm. *read* 1 cm.
" 106, " 5, *for* ci iatis *read* ciliatis.
" 107, " 31, *for* (DC) *read* (DC.).
" 109, " 13. After this line insert lines 13–15 from page 110.
" 109, " 19, *for* (DC) *read* (DC.).
" 110, *dele* lines 13–15.
" 125, line 6, for *L.* read *H.*
" 149, " 6, *for* **tubuliforme** *read* **tubuliformis**.
" 159, " 18, *for* HEXANDRAS *read* HEXANDRA.
" 175, " 14, *dele* the artist-botanist.
" 199, " 26, for *Thalium* read *Thalianum.*
" 214, " 14, *for* Annfeldtia *read* Ahnfeldtia.

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